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DISEASES CAUSED BY BACTERIA AND FUNGI

ROUNTREE, P. M., BARBOUR, G. H. & THOMSON, E. F. (1951.) **Incidence of penicillin-resistant and streptomycin-resistant staphylococci in a hospital.**—*Lancet*. 260. 435-436.

[Authors' summary copied *verbatim*.] 3132

Of the 603 strains of *Staph. pyogenes* isolated from in-patients and out-patients between April, 1949, and April, 1950, and examined for sensitivity to penicillin and streptomycin and for phage type, 274 (53.4%) from 513 in-patients yielded penicillin-resistant strains compared with 22 (24.6%) from 90 out-patients. Strains resistant to both penicillin and streptomycin were obtained from 72 (14%) of 513 in-patients compared with 1 of 90 out-patients. This incidence of 14% was significantly higher than the 3.5% obtained with 196 patients examined in the preceding six months (Rountree and Thomson 1949). At least 65 of these doubly resistant strains belonged to phage types of the genetically related group 6/7/47.

SPINK, W. W. (1951.) **Clinical and biologic significance of penicillin-resistant staphylococci, including observations with streptomycin, aureomycin, chloramphenicol, and terramycin.**—*J. Lab. clin. Med.* 37. 278-293. [Abst. from author's summary.] 3133

The incidence of strains of staphylococci which are highly resistant to penicillin is increasing at an alarming rate. At the time penicillin became available in 1942, approximately 12 per cent. of the strains of staphylococci isolated from patients were found to be naturally resistant to the drug. But over 50 per cent. of the strains isolated in the latter part of 1949 and early months of 1950 were observed to be highly resistant. This demonstration of penicillin resistance *in vitro* has been correlated with the therapeutic failures.

From a clinical point of view the production of the enzyme penicillinase by resistant strains is important, and *in vitro* tests of penicillin

sensitivity should take penicillinase into consideration.

Comparative *in vitro* tests with penicillin, streptomycin, aureomycin, chloramphenicol, and terramycin demonstrated that more strains of staphylococcus were sensitive to aureomycin than to each of the other antibiotics.

In the management of all serious staphylococcal infections, *in vitro* sensitivity tests against several antibiotics should be carried out, since an occasional strain may exhibit resistance to aureomycin.

KÄSTLI, P. (1949.) **Die Bekämpfung der Streptokokken-Mastitis durch die Kontrollorgane der schweizerischen Milchwirtschaft. [Scheme for control of streptococcal mastitis in Switzerland.]**—*Proc. XIIth Internat. Dairy Congr., Stockholm*. Vol. I. Sect. I. & VI. 529-536. [In German. English, French and German summaries. English summary slightly modified.] 3134

A description is given of the streptococcal mastitis campaign among Swiss dairy cattle. A regular inspection of cows' udders organized by dairy societies and by the Headquarters of the Swiss Dairy Federation makes it possible to detect cases of mastitis in good time and to prevent the delivery of contaminated milk. Inspectors are obliged in all cases where the infection of an udder has been observed during inspection to take a milk sample aseptically and to send it to the regional milk control laboratory for bacteriological-diagnostic examination. If this inspection discloses the existence of a streptococcal mastitis infection the herd concerned is submitted to treatment designed to clear it of the disease.

Samples are taken and the bacteriological examination of the milk is carried out free of charge to the owner of the cattle in the laboratory of the dairy society. In some cases the dairy society pays monetary compensation in

respect of cows which have had to be slaughtered on account of incurable streptococcal mastitis. Furthermore steps are taken by the dairy societies to educate herd owners and cowmen in regard to the campaign against streptococcal mastitis.

By these means the dairy societies have succeeded in keeping the incidence figures of streptococcal mastitis down to under 1% of the cows in the dairy herds.

RØMER, O. (1950.) Problemer vedrørende mastitisbekaempelse, specielt diagnostik og behandling. [Problems in the control of mastitis; diagnosis and treatment.]—*Nord. Vet. Med.* 2. 559-580. [English and German summaries.] 3135

Comparative studies on the diagnosis of *Str. agalactiae* mastitis were detailed, with special reference to the cultivation on agar, incubation, and methods used at the Weybridge laboratory, England. An account was also given of the use of penicillin for the control of mastitis in cattle.—CLIVE BRIGGS.

MERILAN, C. P., HERMAN, H. A., EDMONDSON, J. E., TALLMAN, K. L. & CRISLER, O. S. (1950.) The reliability of various diagnostic tests and the efficiency of certain therapeutic measures in control of mastitis.—*Res. Bull. Missouri Agric. exp. Sta.* No. 454. pp. 26. 3136

An extensive review of the literature is included in this report. The experimental work compares the efficiency of diagnostic tests used under field conditions by veterinarians and dairymen with the Hotis test and microscopic examination of the milk. The latter are considered to be the most reliable tests for diagnostic purposes and tests such as the bromthymol-blue test, the chloride test, the catalase test, pH values of milk and leucocyte count of milk do not give very close agreement. Both sulphanilamide in oil and penicillin gave good results in freeing infected quarters from *Streptococcus agalactiae*. A natural recovery rate of 39.02% was observed for untreated animals which had passed through a dry period between diagnostic tests.—L. M. JONES.

STEFANOVA, E. P. (1949.) [The essence of immunity in anthrax. Influence of trauma and of the nervous system on immunity.]—*Veterinariya, Moscow*. 26. No. 9. pp. 15-19. 3137

S. investigated whether *B. anthracis* can stay latent in an animal and then become pathogenic under the influence of some traumatic shock or a vegetable poison. It is stated, no

details, however, being given, that some vegetable poisons either aid or retard the formation of antibodies. To test this theory, rabbits were immunized with the second Tsenkovsky anthrax vaccine, challenged with a lethal dose of *B. anthracis* and then submitted to the action of an excitation agent, in the form of trauma acting on the ear or the administration of a poison. Either of these undid the benefits of vaccination. Tables for five of the experiments are given.—F.A.A.

HAUSAM, W. (1950.) Die Milzbrandfrage in der Lederindustrie.—[The anthrax problem in the leather industry.—*Zbl. Bakt. I. (Orig.)* 155. 352-362. 3138

H. discussed matters relating to the detection of anthrax in skins and hides and methods for their disinfection. When the manner in which the skins and hides had to be dealt with depended upon the use of the Ascoli test for the detection of anthrax infection, as had been the practice in Prussia since 1934, it was found that such a large proportion of them yielded positive reactions that destruction of those which failed to pass the test, coupled with the cost of the organization required for the undertaking of the test rendered the system uneconomical.

H. suggested that the disinfection of all hides and skins by zephirol [a quaternary ammonium salt with a lauryl or myristyl group] would be preferable, but for the high cost involved.—G. P. MARSHALL.

FISHER, S. & GREGORY, T. S. (1951.) Studies on a serological test for the diagnosis of tuberculosis in cattle.—*Aust. vet. J.* 27. 25-34. 3139

Basing their work on that reported by Middlebrook and Dubos (1948) and by Fisher and Keogh (1950) the authors used sheep erythrocytes coated with an extract of human type tubercle bacilli and g. pig complement; serum samples are inactivated at 56°C. for 30 min. and antibodies against sheep erythrocytes adsorbed with washed cells.

In work on experimentally infected cattle the test lacked specificity; cross reactions occurred between mammalian and avian types of tubercle bacilli and Johne's bacilli. Of 40 tuberculous cattle tested 85% gave positive and 15% negative reactions. One negative reactor had extensive udder lesions. Sera from nine out of ten calves with active lesions of TB. yielded negative reactions.—R. BAIN.

TILGNER, K. (1949.) Die Verwendbarkeit der Komplementbindungsreaktion bei der Feststellung der Tuberkulose des Rindes. [Com-

plement fixation reaction in the diagnosis of TB. in cattle.]—*Mh. prakt. Tierheilk.* 1. 221-233. 3140

The complement-fixation test was carried out on the sera of 400 cattle sent to an abattoir. Tuberculin tests were not carried out. The antigen was an extract of tubercle bacilli in benzol, with lecithin added.

Of the 400 cattle, 73 were healthy, 147 had a variety of pathological conditions other than TB. and 180 were tuberculous. In general the test gave satisfactory results in animals with advanced and widespread TB. Age, sex and state of nutrition did not affect the reaction. Severe liver disease gave false reactions. The test was of little use in animals with TB. confined to a primary complex or to isolated lymph nodes and its intensity appeared to increase with the severity and extent of the lesions.

—E. G. WHITE.

BAKKER, S. (1950.) *Praktijkervaringen bij de tuberculose - bestrijding.* [TB. control.]—*Hemera Zoa.* 57. 522-534. [Abst. from English summary.] 3141

A general account of the TB. position in parts of Indonesia where European breeding cattle have been introduced. The indigenous cattle have been free from the disease, but infected European breeds are a danger. The subcutaneous test does not meet the particular conditions in the Tropics where body temperature tends for many reasons to fluctuate more than in temperate climates. B. advocated energetic control of the disease—use of the intradermal test, slaughter of reactors and suitable measures according to current practice in other settled countries.—K. SLAVIN.

THIEULIN, G. (1950.) *Prophylaxie contre la tuberculose bovine. Production laitière et "B.C.G."* [Prophylaxis against TB. in cattle. Milk production and BCG.]—*Lait.* 30. 141-147. 3142

The methods of control of TB. in cattle in France have not been satisfactory. T. considers that the use of BCG vaccine would be the best control measure to adopt and points out that if it were to be adopted, some modification of the existing law would be required, and also changes in some national and international trading regulations would be necessary.

—W. R. BETT.

I. MADIGAN, D. G. (1948.) *Treatment of tuberculosis with sulphetrone.*—*Lancet.* 255. 174-179. 3143

II. CLAY, M. G. & CLAY, A. C. (1948.) *Chemotherapy of tuberculosis with sulphetrone.*—*Ibid.* 180-182. 3144

I. Results of sulphetrone (Tetrasodium 4:4'-bis-(γ -phenylpropylamino)-diphenylsulphone- α : γ : α' : γ' -tetrasulphonate) treatment are inconclusive, but generally no benefit occurs in acute cases, whereas in chronic cases there is improvement. Use of the drug is limited. From the veterinary point of view, difficulties would be encountered with sulphetrone because of care necessary in management; an effective level has to be maintained in the blood and other tissues for a very long time. Sulphetrone interferes with biosynthesis in the alimentary tract and causes anaemias. Renal clearance is rapid and fluids must be restricted to maintain the blood level.

II. Out of 44 cases in human beings, 22 improved, nine of these improved considerably, seven moderately and six slightly; five were unchanged, six became worse and 11 died. Sulphetrone is not a specific cure for TB. and will not rid the body of *Mycobact. tuberculosis*.

—MARCUS BROOKE.

ESPERSEN, E. (1951.) *Studies on streptomycin-resistant strains of the tubercle bacillus.* I. —*Acta path. microbiol. scand.* 28. 174-192. [In English. Abst. from author's summary.] 3145

In two experiments with microcultures in a moist chamber, the growth of two streptomycin-sensitive strains was compared with the growth of two corresponding *in vivo* streptomycin-resistant strains—resistant to 2,000 and 10,000 units per ml., respectively. The sensitive and the *in vivo* streptomycin-resistant strains were morphologically identical. In Dubos medium the same streptomycin-sensitive and streptomycin-resistant strains showed the same rate of growth.

The growth of two *in vitro* streptomycin-resistant strains (resistance >1,000 units) was compared with that of normal strains.

Strains were previously rendered resistant *in vitro* by adaptation and by selection of primarily streptomycin-resistant variants. Strains of tubercle bacilli may therefore develop resistance to streptomycin at differing rates and in different degrees *in vitro*, and strains of the tubercle bacillus that have not been exposed to streptomycin include also highly streptomycin-resistant variants.

STEENKEN, W., JR. (1950.) *Dissociation of the tubercle bacillus. A review.*—*Amer. Rev. Tuberc.* 62. 22-33. 3146

A brief up-to-date review of the literature

on the dissociation phenomenon of the tubercle bacillus; no new experimental data are given. The review aims at clarifying the relevant nomenclature largely by advocating the return of the symbols R and S to their original meanings, as suggested by the author in 1935 [*V.B.* 5. 787].—CLIVE BRIGGS.

JURADO, F. R. & FAGONDE, A. P. (1947.) Sobre algunos caracteres biológicos del "*Mycobacterium tuberculosis avium*". [*Some biological characteristics of avian type Mycobacterium tuberculosis.*]—*B. Aires. Direcc. Inform. Publ. Misc.* No. 259. pp. 53. [English and French summaries.] 3147

This detailed bacteriological study of 45 strains of *Mycobact tuberculosis* var. *avium* is well documented, adequately illustrated and was concluded in 1945. Details are given of methods of cultivation used and of lesions produced in inoculated fowls.

Two strains were studied for differentiation into the "S", "R", and "Ch" types and the characters of the types are described.

—G. P. MARSHALL.

LÉVY, P. P. (1950.) Action du bacille de Koch et des bacilles paratuberculeux sur le virage globulaire. [*Action of tubercle bacilli and of Johne's bacilli on the colour of red blood cells.*]—*C.R. Soc. Biol., Paris.* 144. 1468-1470. 3148

The technique of demonstrating the reducing power possessed by certain bacteria (e.g. the *Eubacteriales*, *Corynebacteriaceae* being used as typical) to change easily the colour of red blood corpuscles to violet is described. In tests with 27 strains of bovine type *Mycobact. tuberculosis* and the BCG strain there was little or no colour change of blood so treated except that a temporary reducing action was obtained with very thick suspensions maintained at 37°C. Strains of Johne's bacillus gave results midway between those obtained with *Corynebacterium* and *Mycobact. tuberculosis*.

L. suggested that an elaboration of this technique would afford a rapid means of differentiation between *M. johnei* and *M. tuberculosis*.

—G. V. LAUGIER.

RICHMOND, L. & CUMMINGS, M. M. (1950.) An evaluation of methods of testing the virulence of acid-fast bacilli.—*Amer. Rev. Tuberc.* 62. 632-637. [Spanish summary.] 3149

Nineteen strains of acid-fast bacilli—thirteen virulent, one attenuated and five saprophytic—were examined for virulence by four tests (a cytochemical test, serpentine growth,

intradermal inoculation in guinea-pigs and classical animal inoculation tests). The most reliable test was animal inoculation, followed by careful study of the animals at autopsy.

—E. G. WHITE.

LÉVADITI, C., VAISMAN, A. & LÉVY, P. (1949.) Virulence du *Mycobacterium tuberculosis* souche 607. [*Virulence of Mycobact. tuberculosis strain 607.*]—*C. R. Acad. Sci., Paris.* 228. 1610-1612. 3150

Mycobacterium tuberculosis strain 607 is pathogenic for the mouse, g. pig, and rabbit. Infection of mice with this strain can be effectively treated with streptomycin, but not with *p*-aminosalicylic acid.—W. R. BETT.

DUBOS, R. J. & MIDDLEBROOK, G. (1948.) The effect of wetting agents on the growth of tubercle bacilli.—*J. exp. Med.* 88. 81-88. [Authors' summary modified.] 3151

Tween 80 and Triton A20 are two water-dispersible, non-ionic, surface-active agents which favour dispersed growth of tubercle bacilli in aqueous media probably by wetting the bacterial surface. Tween 80 is a polyoxyethylene ester of sorbitan monooleate and is liable to enzymatic hydrolysis by lipases. Triton A20 is an arylalkyl polyether of phenol which appears to be resistant to the known enzymes of animal tissues.

Tween 80 loses its ability to disperse cultures of tubercle bacilli in media containing serum; and increases the yield of growth, probably by supplying oleic acid to the bacilli, but Triton A20 does not.

In concentrations sufficient to cause dispersed growth, Tween 80 (purified by removal of unesterified fatty acid) and Triton A20 are completely innocuous for virulent tubercle bacilli. However, Triton A20 has a marked toxic effect on the avirulent variants of mammalian strains; Tween 80 has not.

The two wetting agents also differ in their effects on the morphological aspects of the bacterial cultures. Whereas Triton A20 prevents the formation of large amorphous bacillary clumps, it does not quite so effectively prevent the formation of long bacillary strands. Tween 80 on the contrary prevents the formation of these long cords of bacilli and therefore exerts a more effective dispersing effect on cultures of virulent tubercle bacilli.

BÖE, J. & GREAVES, R. I. N. (1950.) Observations on the biological properties of B.C.G. treated by freeze-drying.—*Acta tuberc. scand.*

24. pp. 38-46. [In English. Authors' summary slightly modified.] 3152

There is still no general agreement as to what is the best method for the prolonged cultivation of the B.C.G. strain. In particular, there is no agreement over the significance of bile-containing media, and many B.C.G. laboratories use different methods of subcultivation.

The authors have freeze-dried B.C.G. vaccine and investigated its biological properties over a period of more than 2 years. They have found that its cultural properties remain unchanged. The results of vaccinating human beings with vaccines prepared from freeze-dried B.C.G. were quite as good as those obtained with a vaccine prepared from B.C.G. cultivated in the usual way. This observation was true both of vaccination with the multiple puncture method and of vaccination with the intracutaneous method of injecting the vaccine. There should, therefore, be no grounds for fearing that a B.C.G. strain may gradually lose its vaccinating properties if maintained in the dry state.

It is hoped that a method has been devised for the maintenance of a stable type culture which is an important step towards the standardisation of a B.C.G. vaccine.

ARONSON, J. D. (1951.) **The fluctuation of the tuberculin reaction in different geographic areas and its relationship to resistance.**—*Amer. Rev. Tuberc.* 63. 121-139. [French and Spanish summaries.] 3153

A survey is presented of 1,541 BCG-vaccinated Indians from Arizona, Wyoming, N. and S. Dakota, and Alaska, and of 1,432 unvaccinated controls, in whom the tuberculin reaction was observed each year for nine to eleven years. A larger percentage of the controls showed a persistent, high degree of tuberculin sensitivity than did the BCG-vaccinated persons. Increased tuberculin sensitivity from 0.005 to 0.00002 mg. of P.P.D. (purified protein derivative) was seen most often among the BCG-vaccinated persons in areas with a high incidence and level of tuberculin reaction—suggesting that the BCG-vaccinated persons had undergone superimposed infection with virulent tubercle bacilli. Instability of the tuberculin reaction and low levels of tuberculin sensitivity may be due to climatic factors.—W. R. BETT.

SARBAR, R. W. (1948.) **Effect of benadryl hydrochloride on the tuberculin reaction in guinea pigs.**—*Amer. Rev. Tuberc.* 57. 504-510. 3154

G. pigs were sensitized with mixed strains of *Mycobacterium tuberculosis* of human and

bovine types given intraperitoneally and 4-6 weeks later 25 were given weekly 0.00002 mg., 0.0005 mg. and 0.005 mg. of P.P.D. tuberculin intradermally and 35 given old tuberculin at 1:100, 1:1,000 and 1:10,000 levels. Forty-eight hours after the second tuberculin reading 22 of the former and 30 of the latter (the rest being kept as controls) were given benadryl at a dose rate of 50 mg. per kg. per day for four days and during this time the g. pigs were retested with P.P.D. and O.T.

50% of g. pigs receiving 0.00002 mg. P.P.D. and 23.3% receiving O.T. at 1:10,000 level gave no skin reaction 24 hours after receiving benadryl. The necrosis caused by 10% O.T. was reduced in all and abolished in 78% of the animals tested. A statistical comparison of the areas of skin reaction in animals treated with benadryl and controls revealed that benadryl significantly reduced the area in all cases.

The importance of considering antihistamine therapy in the interpretation of tuberculin tests is clear.—NESTA DEAN.

LONG, D. A., MILES, A. A. & PERRY, W. L. M. (1951.) **Action of ascorbic acid on tuberculin-sensitivity in guinea pigs, and its modification by dietary and hormonal factors.**—*Lancet.* 260. 1085-1088. [Authors' summary slightly modified.] 3155

Using the response to intradermal tuberculin as a measure of allergic hypersensitivity in albino g. pigs infected with BCG, it was found that: (1) G. pigs on a diet grossly but not completely deficient in ascorbic acid have a relatively high sensitivity. This sensitivity is diminished by adding ascorbic acid to the diet, but not by providing ascorbic acid in raw cabbage. (2) The factor in cabbage which leads to the inhibition of the desensitising action of ascorbic acid contained in the cabbage also inhibits the desensitising action of excess of ascorbic acid added to the diet. (3) Single injections of cortisone or of A.C.T.H. diminish the sensitivity of g. pigs on a cabbage diet. (4) Single injections of cortisone or of A.C.T.H. do not alter the sensitivity of g. pigs either on a basal diet deficient in ascorbic acid, or on this diet augmented by ascorbic acid. (5) The effect of a cabbage diet on ascorbic-acid desensitisation is imitated by a single injection of glutathione.

It was concluded that there is in cabbage a factor which on ingestion leads to the inhibition of the desensitisation produced by the metabolism of ascorbic acid in the tissues of the allergic g. pig; and that the desensitising action of cortisone or of A.C.T.H. in cabbage-fed animals is indirect, depending on the reversal

of the cabbage effect by the hormones. The cabbage factor may possibly be an -SH compound.

MORSE, E. V. & MORGAN, B. B. (1951.) **The pathogenicity of seventeen strains of unidentified corynebacteria for laboratory white mice.**—*Cornell vet.* 41. 58-67. [Authors' summary copied *verbatim*.] 3156

Seventeen strains of previously unidentified diphtheroids isolated from normal and diseased animals have been tested by various techniques for pathogenicity. White mice were employed as the test animals.

Subcutaneous and intraperitoneal inoculations of saline bacterial suspensions were generally ineffective in producing infections. Three cultures when inoculated intravenously produced a cystitis and pyelonephritis which, grossly and microscopically, appeared identical with the lesions observed in *Corynebacterium renale* infections. One of these strains was considered to be an atypical *C. renale*. The other two strains were classified as *C. renale*.

Five cultures when administered intraperitoneally with gastric mucin produced the death of a considerable proportion of the mice within 96 hours.

The administration of gastric mucin enabled 12 diphtheroid strains to survive for longer periods in the tissues of the mice than was the case when these diphtheroids were inoculated without the mucin.

Diphtheria antitoxin failed to protect mice that were inoculated intraperitoneally with two possible toxin-producing cultures and mucin.

It is recommended that unidentified diphtheroids be tested for pathogenicity for 8- to 12-week-old white mice. Such tests, in conjunction with morphological and biochemical characteristics, may be helpful in more accurate future classification of these organisms.

BAKKER, S. (1950.) Over malleus-bestrijding. [Control of glanders.]—*Hemera Zoa.* 57. 699-707. [English, French and German summaries. Abst. from summaries.] 3157

The necessity for reorganization of the control of glanders in Indonesia was discussed. B. proposed a scheme whereby clinically affected horses and those which react to the mallein and complement-fixation tests should be destroyed. All horses should be tested by both methods twice a year. If necessary, the number of veterinary personnel should be increased.

OSEBOLD, J. W., DICKINSON, E. M. & BABCOCK, W. E. (1950.) **Immunization of turkeys against *Erysipelothrix rhusiopathiae* with**

avirulent live culture.—*Cornell Vet.* 40. 387-391. [Abst. from authors' summary.] 3158

In preliminary trials, active immunity was demonstrated against *Erysipelothrix rhusiopathiae* in two mature turkeys 20 days after vaccination with an avirulent live-culture vaccine. Active immunity was demonstrated in nine mature turkeys 12 weeks after vaccination with a similar vaccine. Two of the turkeys given the vaccine died of the disease as a result of its use.

MANJREKAR, S. L. (1950.) **Penicillin in pasteurella infection in sheep.**—*Indian vet. J.* 27. 101-102. 3159

Two rams with pasteurellosis recovered after treatment with penicillin G (sodium salt). —J. M. LALL.

NETER, E., GORZYNSKI, G. A. & CASS, W. A. (1951.) **Aureomycin and terramycin treatment of *Pasteurella multocida* infection and neomycin's *in vitro* effects on *P. multocida*.**—*Proc. Soc. exp. Biol., N.Y.* 76. 493-495. [Authors' summary slightly modified.] 3160

Both aureomycin and terramycin administered subcutaneously, either prophylactically or therapeutically (4 hours after infection) to white mice infected intraperitoneally with 1,000 MLD₁₀₀ of *P. multocida* prolonged survival and lowered the fatality rate. Aureomycin was distinctly superior to terramycin; a single dose of 2 mg of aureomycin resulted in a survival rate of approximately 87%, whereas that of the mice treated with terramycin was approximately 47%. Smaller doses (1 mg and less) of both antibiotics were less effective. Treatment over a period of 6 days did not increase substantially the survival rate as compared with a single dose treatment on day of infection. *In vitro* neomycin was of the same bacteriostatic potency as streptomycin against 7 strains of *P. multocida* and was markedly superior against the eighth, streptomycin-resistant, strain.

ALEXANDER, H. E. & LEIDY, G. (1951.) **Determination of inherited traits of *H. influenzae* by desoxyribonucleic acid fractions isolated from type-specific cells.**—*J. exp. Med.* 93. 345-359. [Authors' summary copied *verbatim*.] 3161

Change of non-typable (R) strains of *H. influenzae* into the specific type of origin or new types (S) has been effected *in vitro* in a predictable fashion within a single 24 hour growth period, by a desoxyribonucleic acid-containing fraction isolated from type-specific cells of the type desired.

Only a small proportion of the population of R cells are susceptible to the change induced in inherited characteristics by the desoxy-ribonucleic acid fraction. The data suggest that the number of susceptible cells present in any given population size varies with the specific type of origin of the R cells; a lesser degree of variation in different independent cultures of the same strain and population size has been demonstrated. The results suggest that the R *H. influenzae* cells which are susceptible to transformation arise as the result of mutation.

It has been demonstrated that the reaction necessary for transformation takes place virtually immediately if susceptible cells are present. Furthermore it has been shown that the change which enables an R cell to form a colony of type-specific organisms has been completed within 15 minutes in an environment which does not permit cell multiplication.

PENHA, A. M. & D'APICE, M. (1949-50.) Contribuição ao estudo da enterite infecciosa dos bezerros. II. Experiências de vacinação e mecanismo de transmissão da imunidade da vaca ao bezerro. [Infectious diarrhoea of calves. II. Immunization of calves against *Salmonella dublin* infection.]—*Arq. Inst. biol., S. Paulo*. 19. pp. 309-324. [English summary.] [For part I, see V.B. 19. 187.] 3162

Salmonella dublin infection is common in calves in the State of São Paulo, Brazil. The authors describe the successful use of a heat-killed vaccine given 2 months before calving, the calf being also vaccinated about three weeks after birth.—G. P. MARSHALL.

HUISMAN, W. (1950.) Over het voorkomen van tot het geslacht "*Salmonella*" behorende micro-organismen bij gezonde varkens. [The occurrence of *Salmonella* in healthy pigs.]—Thesis, Utrecht. pp. 93. 3163

Salmonella were isolated in enrichment culture of the faeces and mesenteric lymph nodes of 14 out of 503 normal slaughtered pigs and also from the duodenal wall, the liver, portal lymph nodes, bile and spleen of 26 out of 512 other pigs.

S. typhi-murium were present in 29, *S. enteritidis* in one, *S. dublin* in six, *S. paratyphi B* in one, *S. newport* in two, *S. newington* in one, and *S. give* in one. In one case both *S. typhi-murium* and *S. newington* were isolated. Most strains were cultured from the mesenteric lymph nodes (53), the liver (13) and the portal lymph nodes (12), the duodenal wall (15) and the duodenal contents (11). The organisms were isolated only three times from the rectal

contents, twice from the bile and never from the spleen (115 spleens cultured). Cultures made from faeces of cattle, pigs, geese, ducks, fowls, human beings (in a case of *S. paratyphi B* infection), horses, domestic rabbits, wild rats and a dog on 20 farms from which the infected pigs originated gave negative results. Rats and mice may play an important role in the spread of the infection.—C. A. VAN DORSSEN.

VAN DORSSEN, C. A. (1950.) Cultural variations in some strains isolated from cases of pullorum disease.—*Tijdschr. Diergeneesk.* 75. 617-621. [In English.] 3164

Cultural variations in a number of strains of *Salmonella pullorum* are listed. Only two of these strains fermented sorbitol. Two strains of *S. gallinarum* were examined and agreed with Kauffmann's observations except that they failed to ferment rhamnose and dextrin. Four strains of *S. gallinarum* var. *duisberg* and three non-gas-forming intermediate strains were also examined.—D. LUKE.

GEURDEN, L. M. G. & DEVOS, A. (1949.) Hoogten en laagten bij het pullorumonderzoek. [Disadvantages of standard antigen in pullorum tests.]—*Vlaam. Diergeneesk. Tijdschr.* 18. 221-226. [English, French and German summaries.] 3165

The blood serum of a hen failed to agglutinate the standard pullorum antigen, although it agglutinated a strain of *S. pullorum* isolated from a dead chick embryo produced by the hen. The authors considered that it was necessary to use an antigen composed of a number of different agglutinable strains of *S. pullorum* isolated in the country in which the antigen is to be used.—CLIVE BRIGGS.

COOPER, J. B., MORGAN, C. L., ANDERSON, G. W. & JONES, J. C. (1951.) Effect of sulfamerazine on pullorum reactors.—*Poult. Sci.* 30. 249-254. [Authors' conclusions slightly modified.] 3166

At the level and for the period fed, sulfamerazine temporarily reduced egg production, feed and water consumption. Permanent and temporary changes from positive reaction to negative reaction resulted when sulfamerazine was given in the feed or water. Sulfamerazine may eliminate *S. pullorum* from some hens. *S. pullorum* was not prevented from passing from the hen to the chick through the egg by the treatments used in this study. Sulfamerazine cannot be considered a substitute for a pullorum eradication program by blood testing and hatchery sanitation.

KAUFFMANN, F., SILBERSTEIN, W. & GERICHTER, C. B. (1950.) A new salmonella type (*S. ness-ziona*).—*Acta path. microbiol. scand.* 27. 829. [In English.] 3167

An account of a new salmonella type, *Salmonella ness-ziona*, with the formula VI, VII:1,_{2,3}:1,5, isolated from outbreaks of fatal disease in fowls on two farms but from a common breeder, and also from a healthy human being. [It is to be inferred from the context that the human patient had had no contact with the fowls in question.]

HOLMBERG, J. (1950.) Den smittsamma kastningens bekämpande i Finland. [Control of bovine contagious abortion in Finland].—*Nord. Vet.-Med.* 2. 1031-1059. [English and German summaries.] 3168

The rational control of contagious abortion in Finland under the Veterinary Department of the Ministry of Agriculture began in 1938 when new legislation was put into force. The agglutination test with blood serum and the ring test with milk were used, together with bacteriological examination of placentas and foetuses where necessary. A herd is declared infected if any positive bacteriological findings are made, if a recently calved cow in the herd has a titre of 1:50 or higher, or if other animals have a titre of 1:100 or higher. Herds with animals which have a titre of 1:10 to 1:20, and in some instances 1:50, and exceptionally 1:100 are placed under official control and subjected to later tests.

In severely infected areas animals with a high titre are slaughtered but in other districts and in acutely infected herds animals with a titre as low as 1:10 have been destroyed. A herd is declared free after passing satisfactory routine tests, a titre of 1:10-1:20 being regarded as an insignificant remnant of an old infection. Relapses have occurred in less than 1% of herds. During the period 1938-49, 8,255 infected herds out of 8,712 have been certified as free. In 1949-50 only 416 herds were declared infected and 41 were placed under official control.

In 1938, 577 cases of contagious abortion were bacteriologically positive compared with 14 in 1949. During that period the incidence of undulant fever in man fell from 28 cases to 2 a year.—H. WESTERMARCK.

MCDIARMID, A. (1951.) The vaccination of pregnant cattle with strain 19 *Br. abortus* vaccine during an outbreak of brucellosis in a dairy herd.—*Vet. Rec.* 63. 265-268. [Author's summary modified.] 3169

An attempt made to control the spread of *Br. abortus* infection in a dairy herd by blood

testing and disposal of reactors met with no success and it became necessary to vaccinate all the cows, including pregnant animals with S. 19 vaccine.

Five cases of *Br. abortus* infection were detected at parturition from 42 animals vaccinated at a mean gestation period of 5.7 months. Four of these five strains were apparently field strains, but the fifth strain was aerobic, sensitive to thionin blue, and similar to S. 19 in virulence for the g. pig. The risk of abortion due to vaccination of pregnant cattle with S. 19 *Br. abortus* vaccine appears to be slight.

BOSGRA, O. (1951.) In bevroren toestand gedroogd *Brucella abortus* str. 19 vaccin. [A freeze-dried *Brucella abortus* strain 19 vaccine].—*Tijdschr. Diergeneesk.* 76. 281-294. [English summary.] 3170

A description is given of the method of dry freezing of *Br. abortus* vaccine at the Rotterdam State Serum Institute. Strain 19 is cultivated on a modified potato agar, the suspension being freeze dried in 7½% glucose solution with an average survival percentage of 50%, and sealed under high vacuum. Prefreezing in a low speed centrifuge at -20°C. proved to be an advantage. A very large output was made possible.—C. A. VAN DORSSEN.

DOWNING, C. W. (1951.) Accident with strain 19.—*Vet. Med.* 46. 117-118. 3171

The needle point of a syringe loaded with strain 19 vaccine just broke the skin on the wrist of a farmer and active brucellosis developed, despite immediate first aid treatment of the minor wound. There were chills, sweating and severe headache within 24 hours. Hospitalization and drug therapy did not prevent the development of the disease although recovery was complete. Penicillin in doses of 100,000 units was given several times and also aureomycin for the first ten days and then chloromycetin for the next ten days, both in doses of 250 mg. orally every three hours. The agglutination titre was negative on the day of the accident but had reached 1:640 by the third day and remained unchanged for three and a half months.—L. M. JONES.

STOENNER, H. G. (1951.) Isolation of *Brucella abortus* from sheep.—*J. Amer. vet. med. Ass.* 118. 101-102. 3172

Brucellosis of sheep is usually caused by *Br. melitensis* infection. In Southern California, milk samples were collected from 104 ewes and divided into batches. From one batch, which contained milk from 10 ewes, a

strain of *Br. abortus* was isolated. Serum agglutination tests revealed a positive titre in one ewe.—C. C. BANNATYNE.

ROMER, C. (1949.) **Treatment of abortus fever with sulphonamides and blood transfusion.**—*Brit. med. J.* June 11th. 1035-1036. 3173

Two cases of abortus fever in human beings of two and 12 weeks duration respectively were treated with a blood transfusion of 1 pint of fresh blood and 3 g. of sulphamethazine followed by 2 g. sulphamethazine at six-hourly intervals for the following week. On clinical grounds R. considered that cures were effected.—J. I. TAYLOR.

KASPRZAK, E., PIENIAŻEK, J. & SERAFINOWICZ, H. (1950.) **Tularemia choroba zawodowa odzwierzęca. [Tularaemia, a professional disease.]**—*Med. weteryn.* 6. 345-349. [English and Russian summaries. Abst. from English summary.] 3174

A general account of the disease.

—JAS. G. O'SULLIVAN.

BRUYÈRE, A. & DAVID, A. (1951.) **Paralysie labio-glosso-pharyngée et botulisme, chez le cheval. [Bulbar paralysis and botulism, in horses.]**—*Rev. Méd. vét., Lyon et Toulouse.* 102. 155-160. 3175

The authors discuss labio-glossal-pharyngeal paralysis in horses, encountered in some Western European countries and argue that it is probably botulism. There is sometimes a history that the animal has used a nearly dry muddy pond, the trampled vegetation of which may have provided the pabulum for the development of the botulinus toxin. It is stated that affected horses given botulinus anti-toxin after ten days' illness have made dramatic recoveries. No account is given of laboratory tests to prove the theories advanced.—R. G. MARES.

HIGNETT, P. G. (1951.) ***Vibrio foetus* infection in cattle.**—*Vet. Rec.* 63. 268-269. 3176

Clinical manifestations, diagnosis and control of *V. fetus* infection in cattle are summarized. Attention is drawn to the increasing number of herds in which *V. fetus* has been incriminated as the cause of breeding problems.—L. M. JONES.

PLASTRIDGE, W. N. (1951.) **Vibriosis in cattle.**—*Vet. Ext. Quart. Univ. Pa.* 51. 62-73. [Abst. from author's summary.] 3177

Vibrio infection in cattle is an important cause of abortion, sale of cows because of sterility, and a lowered conception rate in infected cows and heifers.

The disease has been found in brucellosis infected herds, as well as herds free from brucellosis. In some untested herds the occurrence of vibronic abortions among calfhooed-vaccinated animals has been erroneously attributed to failure of the vaccine to protect against brucellosis.

A summary of available information on control is given.

I. ROSENTHAL, S. R. & ELMORE, F. H. (1950.) **Studies on the contagiousness of coccidioidomycosis. II. The fate of spherules in sputum exposed out of doors.**—*Amer. Rev. Tuberc.* 61. 95-105. [Spanish summary; English summary copied *verbatim*.] 3178

II. ROSENTHAL, S. R. & ELMORE, F. H. (1950.) **Studies on the contagiousness of coccidioidomycosis. III. Infection in guinea pigs by contact with diseased animals.**—*Ibid.* 106-115. [Spanish summary; English summary slightly modified.] 3179

I. Preliminary studies indicate that the vegetative form of *Coccidioides immitis* develops out of doors, especially in earth exposed to the sun and in the shade without soil. Spherules were seen most frequently in sputum samples kept in the shade without earth, and least frequently in the sun with earth. The out-of-door condition in which both phases of the fungus were seen most frequently was in the shade without earth. The fungus was seen least frequently of all in specimens exposed in the sun without earth.

The vegetative form was rarely seen after 30 days, but the parasitic or spherule phase was evident up to 240 days of exposure. The viability of the spherules was of very low order under the conditions of this experiment.

II. Normal g. pigs when housed with g. pigs having pulmonary coccidioidomycosis may develop gross pulmonary lesions or other evidence of infection. Ten of 13 normal g. pigs housed in four separate cages with infected g. pigs presented evidence of infection after 46 to 175 days of contact, as determined by positive skin tests, pulmonary lesions, or by spherules seen on direct mounts of these lesions.

ZIMMERMAN, L. E. (1950.) ***Candida* and *aspergillus* endocarditis. With comments on the role of antibiotics in dissemination of fungus disease.**—*Arch. Path.* 50. 591-605. [Author's summary modified.] 3180

This presentation has been based on a study of three cases of mycotic disease disseminated throughout the body of the host, which illustrate the difficulties of differentiating *Candida*, *Aspergillus*, *Mucor*, *Cryptococcus* and

Histoplasma as they appear in tissue sections. In one case the causative organism was a *Candida*; in the other two, *Aspergillus*.

Variations in staining qualities and morphological features often confuse the histopathological diagnosis of fungus disease, and accurate identification depends on cultural studies.

Factors of importance in the genesis of these infections include the administration of antibiotic drugs and bone marrow depressants, drug addiction and metastasis of superficial lesions.

MEYER, E. & VERGES, P. (1950.) **Mouse pathogenicity as a diagnostic aid in the identification of *Actinomyces bovis*.**—*J. Lab. clin. Med.* 36. 667-674. [Authors' conclusions slightly modified.] 3181

The authors discussed the difficulties of identifying *Actinomyces bovis*, especially in connexion with its similarity with organisms which they termed "anaerobic diphtheroids", isolated from a variety of human pathologic conditions, biological studies on these organisms not having revealed characteristics for satisfactory classification.

Gastric mucin enhanced the invasiveness of *Actinomyces bovis* in a high percentage of young, male, albino mice when injected intraperitoneally.

"Sulfur granules" and clumps of branched mycelia were found in purulent exudates and also in histologic sections. Macroscopic lesions resembling those of *Mycobact. tuberculosis (hominis)* occurred ten to fifteen days after inoculation and persisted up to forty-five days.

With few exceptions, gastric mucin failed to enhance the invasiveness of the "anaerobic diphtheroids". Furthermore, the lesions differed from those produced by *Actinomyces bovis*. Sulfur granules or clumps of branched mycelia were not found either directly or in histologic sections.

BENEDEK, T. (1950.) **Critical survey of the mycological literature of the years 1939-1942.**—*Mycopath. Mycol. Applicata.* 5. 14-64. [In English.] 3182

A general survey of the literature relating to fungous parasites, written from the point of view of fungous infections of man, under the following headings: technique, statistics, culture, *Trichophyton*, *Microsporum*, *Favus* and *Epidermophyton*.

VISINTINI, A. (1949.) **La leptospirosi del cane. [Types of canine *Leptospira* infection.]**—*Zooprofilassi.* 4. 469-479. [French and German summaries.] 3183

Cases of canine leptospirosis of the class-

ical icteric and uraemic types have been found in North-East Italy. Of the therapeutic agents used penicillin was the only one that arrested the course of the illness.—I. W. JENNINGS.

DONATIEN, A., GAYOT, G. & POUL, J. (1950.) **Leptospirose du chien en Algérie. [Leptospirosis in a dog in Algeria.]**—*Arch. Inst. Pasteur Algér.* 28. 441-448. 3184

This was said to be the first recorded case of leptospirosis in the dog in Algeria. Leptospira were found in histological sections of the liver and kidney of a dog with severe jaundice, subcutaneous haemorrhages and acute nephritis. The organism was passaged eight times in g. pigs and twice in dogs. All g. pigs used were susceptible to intraperitoneal or to subcutaneous inoculation: the incubation period varied from 2-8 days, being most often four days. The lesions in g. pigs and dogs comprised icterus, subcutaneous haemorrhages, epicardial and pleural haemorrhages and enlargement of the superficial lymph nodes, especially the precaval, with a rose-coloured oedema of the surrounding connective tissue. Widespread haemorrhages were the characteristic feature in histological sections of liver, lung, kidneys and lymph nodes.

The organisms had the morphological features of leptospira, with curved ends and a straight intermediate portion. The filaments varied in length from 8-30 μ (usually about 15 μ) and were less than 1 μ in thickness. The organisms could be found in smears of peripheral blood on the first or second day of pyrexia. P.M. they were extremely numerous in sections of liver and kidney, sometimes as many as 30 being found in a single field: they were scanty in the spleen, lymph nodes and lungs and absent from the brain.

Cultural examination, serological tests, identification of the organism and preventive measures had not yet been investigated.

—E. G. WHITE.

EPHRATI, P. (1946.) **[A severe case of leptospirosis treated with penicillin.]**—*Harefuah.* 30. 125-129. [Abst. from English summary.] 3185

A record of leptospira infection of 30 days' duration in a butcher in Palestine and of the treatment with penicillin from the 11th day of illness. Though very ill, improvement followed the treatment and the patient recovered.

MATTEI, C., KOLOCHINE-ERBER, B., AVIERINOS, F., RECORDIER, A.-M., PAYAN, H. & BARBE, A. (1950.) **Quatre observations de maladie des porchers contractée en Provence. [Swine-**

herd's disease in Provence.]—*Pr. méd.* 58. 1269. 3186

A record of four human cases of leptospirosis, in workers on a farm near Marseilles. Two gave a positive serological test against *Leptospira pomona* and one against *L. mitis*; the fourth case did not react. All recovered after treatment with chloromycetin, 3 g. per day for 14–15 days. The four persons affected were the only ones who came into direct contact with pigs on the farm: no other persons were affected. There was no mention of examination of the pigs.—E. G. WHITE.

LEVADITI, C., VAISMAN, A. & HAMELIN, A. (1951.) Immunologie—Séro-diagnostic de la syphilis par immobilisation du *Treponema pallidum* (méthode de Nelson). [Sero diagnosis of syphilis.]—*C. R. Acad. Sci., Paris*. 232. 272–273. 3187

The method described by Nelson [V.B. 19. 474.], based on immobilization of *Treponema pallidum* by the serum of rabbits infected with syphilis and of syphilitic human subjects, is useful for sero-diagnosis of syphilis. —W. R. BETT.

MANJREKAR, S. L. (1950.) Contagious caprine pleuro-pneumonia.—*Indian vet. J.* 26. 538–545. 3188

A brief note on the disease, including a small-scale field trial of a vaccine prepared from a formalized filtrate of affected lung and brief mention of chemotherapy.—P. R. K. IYER.

See also absts. 3229 (transmission of TB. by swine fever vaccination); 3231 (broncho-pneumonia in piglets); 3314 (nasal granuloma in cattle); 3364–65 (pathogenic bacteria in milk); 3411 (report, Canada); 3412–3413 (report, Australia); 3414 (report, Malta); 3416–3417 (reports, British Guiana); 3418 (report, East Africa); 3419–3420 (reports; Zanzibar); 3421 (report, Northern Rhodesia); 3422 (report, Sierra Leone); 3425 (report, Madagascar); 3426 (report, U.S.A.); 3431 (book, mycobacteria); 3437 (book, milk hygiene).

DISEASES CAUSED BY PROTOZOAN PARASITES

FIENNES, R. N. T.-W.- (1950.) The cattle trypanosomiasis: some considerations of pathology and immunity.—*Ann. trop. Med. Parasit.* 44. 42–54. 3191

No evidence exists for the presence of trypanotoxin but a possible cause of death in acute trypanosomiasis is anaphylaxis. Host-parasite relationship and aspects of the relapsing properties of trypanosomes were considered. The latter were attributed to antigenic variation. The properties of the host defences and the implications of different strains of *T. congolense* are discussed.—JAS. G. O'SULLIVAN.

GRIMPRET, J., CORVISIER, M. & SADOT, M. (1950.) Essais de traitement de la dourine par le diamidinodiphénoxy-pentane. [Treatment of dourine with pentamidine.]—*Bull. Soc. Path. exot.* 43. 558–563. 3192

HINSHELWOOD, C. (1951.) Decline and death of bacterial populations.—*Nature, Lond.* 167. 666–669. 3189

The law of decline of a bacterial population frequently approximates to an exponential form. Taken as exact, this implies that the death of a cell is governed by a chance event such as the accidental encounter between some sensitive cell component and a molecule of a toxic agent. The unsatisfactory features of this theory led H. to propose a theory based on the waxing and waning of certain cell functions. Deviations from this are discussed.

—JAMES H. HALE.

BARTHOLOMEW, J. W., ROBERTS, M. A. & EVANS, E. E. (1950.) Dye exchange in bacterial cells, and the theory of staining.—*Stain Tech.* 25. 181–186. [Authors' abst. slightly modified.] 3190

Bacterial cells were stained in sequence, and at pH ranging from 5–9, by 22 different basic dyes. It was found that any dye could replace another already present in the bacterial cell. This replacement was shown to act according to mass action laws for reversible reactions, and hence was influenced by concentration of reagent and time of application. Since basic dyes are also known to react at carboxyl group sites, the phenomena of staining of bacterial cells by ordinary basic dyes must be a chemical adsorption exchange reaction.

In a general discussion it was stated that pentamidine is well tolerated by equines in doses of 6 mg. per kg. given intramuscularly in 5% solution. Intravenous administration may produce symptoms of shock. The solution is unstable and the products of decomposition are toxic; solutions should therefore be either freshly prepared or better, a more stable solution of the methane sulphonate derivative of diamidinodiphenoxy pentane should be used. Cure was achieved in six stallions and seven mares with chronic or acute disease.—N. DEAN.

PELLEGRINI, D. (1948.) Ventiquattro passaggi seriali sull'ovino del *Trypanosoma simiae* (Bruce). [Serial passage of *Trypanosoma simiae* in sheep.]—*Boll. Soc. ital. Med. Ig. trop. (Sez. Eritrea). Asmara.* 8. 159–171. 3193

After 24 serial passages through sheep, a strain of *T. simiae* taken from a camel, was found to be unchanged in its biological and morphological characters. The parasites gave rise to the usual benign infection in sheep. The incubation period settled down after the third passage to an average of three days, the range being 2-5 days. After the 24th passage the organisms still displayed their high pathogenicity for the pig and camel and remained non-pathogenic for a calf, two g. pigs and a rabbit.—I. W. JENNINGS.

BACKHOUSE, T. C. & BOLLIGER, A. (1951.)
Transmission of Chagas' disease to the Australian marsupial *Trichosurus vulpecula*.—*Trans. R. Soc. trop. Med. Hyg.* 44. 521-533. [Authors' summary slightly modified.] 3194

The results of inoculating *Trypanosoma cruzi* into 40 specimens of the marsupial, *T. vulpecula*, the common Australian phalanger or possum, are recorded.

After a single injection of blood or fluid containing *T. cruzi*, all these marsupials became infected and exhibited an acute form of South American trypanosomiasis or Chagas' disease. The death-rate was 60 per cent. in non-immunized animals, and death due to heart failure occurred 21 to 35 days after inoculation. Survivors remained immune to subsequent infections with *T. cruzi*. No evidence of age resistance was found and passive immunization did not protect the animals against infection but reduced the mortality rate.

SCHOENAERS, F. (1950.) Réceptivité du daman (*Dendrohyrax arborea adolfifriederici*) à *Trypanosoma vivax*. [Susceptibility of the hyrax (*Dendrohyrax arborea*) to *Trypanosoma vivax*.—*Ann. Soc. belg. Méd. trop.* 30. 69-70. 3195

S. reports the successful infection of the hyrax (*Dendrohyrax arborea*) with *T. vivax* following the subcutaneous injection of 1 ml. of infected goat's blood containing several parasites per microscopic field (magnification $\times 250$).

Up to the fifth day four out of five animals had died and very few parasites had been seen in the blood (one or two trypanosomes per smear). In the remaining hyrax, the parasites gradually increased to a maximum infection on the ninth day of four or five trypanosomes per microscopic field. The intensity of the infection then rapidly decreased. No symptoms of the infection were observed.—L. P. JOYNER.

ORMEROD, W. E. (1951.) I. The mode of action of antrycide. II. A study of basophilic inclusion bodies produced by chemotherapeutic agents in trypanosomes.—*Brit. J. Pharmacol.* 6. 325-333 & 334-341. [Author's summaries copied verbatim.] 3196

I. Antrycide has been shown to be without trypanocidal action *in vitro* at higher concentrations than can be achieved *in vivo* during observation periods up to 20 hours. Similar high concentrations have no observable effect *in vitro* on the respiration and glucose utilization in trypanosomes. Still higher concentrations of the order of 1/20,000 which do show some trypanocidal activity *in vitro* and inhibit the respiration of trypanosomes are equally active against normal and antrycide-resistant trypanosomes.

An effective dose of antrycide may take from two to four days to clear trypanosomes from the blood of a mouse, but after 24 hours the circulating trypanosomes will not infect fresh mice.

After an effective dose, basophilic inclusion bodies appear in the cytoplasm of all trypanosomes in the blood 24 hours after dosing. These bodies can also be seen in the living trypanosome by phase contrast microscopy. Twenty-four hours after a dose of antrycide, faintly fluorescent bodies can be seen in the cytoplasm of trypanosomes. It is suggested that some of the largest of these correspond to the distended basal vacuole and the others to the inclusion bodies mentioned above.

From 24 hours after an effective dose the number of trypanosomes showing signs of division diminishes slowly.

T. rhodesiense reacts to a small dose of antrycide by producing multinuclear forms.

Three conclusions are put forward and discussed: (a) Antrycide penetrates slowly into the cell and exerts its action in the cell and not on the surface membrane. (b) The action of antrycide is on the cytoplasm and not primarily on the nucleus. (c) Antrycide in normal curative doses acts as a growth inhibitor and not as a direct "trypanocide".

II. Basophilic inclusion bodies are produced in trypanosomes in the living animal by effective doses of antrycide, dimidium bromide, and suramin. Similar inclusion bodies are produced *in vitro* by vital stains, and their formation can be observed under the microscope. The relation of these inclusion bodies to the "volutin" granules, and to basophilic inclusion bodies produced in other biological systems, is discussed. The inclusion bodies produced by

antricyde have been shown to contain ribonucleic acid and protein.

It is suggested that these drugs inhibit the growth and division of trypanosomes by preventing the normal interaction in the cytoplasm of protein with ribonucleic acid.

The activity of antricyde, dimidium bromide, and suramin is connected with the presence in their molecules of permanent charges, so that they are retained in the trypanosome; The charged forms of vital stains, on the other hand, are in equilibrium at pH 7.5 with uncharged forms which can diffuse rapidly through the trypanosome membrane.

The changes produced by the trypanocidal drugs treated here are permanent, whereas those produced by vital stains are reversible.

HO, E. A., YUAN, I.-C. & CHU, H.-J. (1950.) **On canine leishmaniasis and human kala-azar in Peking and its adjacent villages.**—*Chin. med. J.* 68. 241-247. [Authors' summary slightly modified.] 3197

Possible relationship between human kala-azar and canine visceral leishmaniasis was investigated in Peking and its adjacent 50 villages. Parallelism between the incidences of the two diseases was not observed, and human kala-azar apparently maintains its endemicity in absence of the canine disease. In Peking (a) The average incidence of human kala-azar was 5.3 per 100,000 population per annum for 1939 and 1940. (b) Twenty-seven dogs among 2,474 examined were naturally infected with visceral leishmaniasis. (c) Dogs of foreign breeds, such as police dogs and English setters, seemed to be more liable to contract the infection. (d) Among 130 cases of human kala-azar and 35 cases of naturally infected dogs, there was only one instance of the two diseases occurring in the same household. However, the incidence of the canine disease was found to be definitely higher in the neighbourhood of patients' dwellings than for the city as a whole.

In villages (a) The annual incidence rate of human kala-azar was 63 times as great as inside the city. (b) Canine visceral leishmaniasis, on the other hand, was absent in all but three villages. Of 1,780 dogs examined, only 4 dogs were found to be naturally infected. (c) Human kala-azar apparently maintained its own endemicity in many villages in absence of canine leishmaniasis.

DESOWITZ, R. S. (1950.) **Enterohepatitis (blackhead) of turkeys.**—*Trans. R. Soc. trop. Med. Hyg.* 44. 2-3. 3198

A brief account of a demonstration given at a laboratory meeting. *Histomonas meleagridis*

was shown to be a flagellate in cultural form, with an amoeboid phase when invading the liver and caecum. It could also be induced experimentally to invade subcutaneous tissue, with the formation of an ulcer. Sections were shown of caecal tissue from a turkey infected experimentally by feeding embryonated *Heterakis gallinae* eggs. Miscellaneous specimens were demonstrated showing an unidentified protozoan in the gut epithelium of *H. gallinae* and *Entamoeba gallinarum*.—D. W. JOLLY.

RAY, H. N. (1950.) **Protozoa affecting the sheep and goats in India.**—*Indian Fmg.* 10. 487-489. 3199

R. described briefly some of the important protozoan diseases, viz. coccidiosis, babesiasis, theileriasis, surra, etc. Stress was laid on the importance of collection of information from the field and to achieve this he recommends that the Indian farmer should come in close contact with the laboratory workers through the village "Panchayat" [communal court].

—M. M. SINGH.

KNOPPERS, A. Th. (1949.) **Twofold quinine resistance of *Plasmodium gallinaceum*, induced by regular administration of the drug.**—*Doc. Neerl. Ind. Morb. Trop.* 1. 55-66. [Abst. from author's summary.] 3200

A strain of *Pl. gallinaceum* was treated regularly with quinine, the strain being transmitted weekly by blood-inoculation. After 26 weeks a slight but demonstrable resistance against quinine developed. With proguanil (paludrine), N_1 -p-chlorophenyl- N_5 -isopropyl biguanide, a highly resistant strain could be created in a short time.

The quinine resistant strain was normally sensitive to atebirin, chloroquine (7-chloro-4-(4-diethylamino-1-methylbutylamino quinoline), paludrine and sulphamerazine. The strain was over-sensitive to pamaquin (plasmoquin) pentaquine and isopentaquine (8-aminoquinolines). There is a cross-resistance against the laevo-rotatory alkaloid cinchonidine, and a diminished resistance against the dextro-rotatory alkaloids cinchonine and quinidine.

After the first mosquito-passage a small part of the resistance was lost, but subsequent mosquito-passages did not alter it further. After inoculation by means of exo-erythrocytic forms of the resistant strain the resistance was for the greater part retained—perhaps even completely.

After withholding quinine for 26 weeks the strain was still markedly resistant though a little less so than the original strain.

MUDALIAR, S. V., ACHARY, G. R. & ALWAR, V. S. (1950.) **On a species of babesia in an**

Indian wild cat (*Felis catus*).—Indian vet. J. 26. 392-395. 3201

The authors recorded a mild infection of piroplasms in an apparently healthy wild cat infested with a few ticks of *Haemophysalis* sp. The morphology of the organism which they propose to name *Babesia cati* n. sp. Mudaliar, Achary, and Alwar, 1946, was described. Inoculation of infected blood into a domestic kitten failed to transmit the disease.—H. S. DHILLON.

METIANU, T. (1950.) A propos d'un nouveau parasite endoglobulaire (*Anaplasma centrale*) chez les bovidés de Roumanie. [*Anaplasma centrale* in Roumania.]—*Ann. Parasit. hum. comp.* 25. 8-14. 3202

Two cases of *Anaplasma centrale* infection in cattle in Roumania are recorded which constitute the first observations of this parasite in that country. The first, a three-year-old female, was believed to be infected with *Babesia bovis* and had typical symptoms of this infection. Examination of blood smears revealed the presence of *Anaplasma centrale* in addition to the piroplasm. In the second, a four-year-old pedigree bull, in poor condition with slight glandular enlargement, microscopic examination of the blood revealed *Anaplasma centrale* together with *Theileria mutans*. Photomicrographs, measurements, and some other observations are given in comparison with those of other workers in support of the identity of the parasites.

—L. P. JOYNER.

STEEN, E. & KASS, E. (1951.) A new toxoplasma antigen for complement fixation test.—*Acta path. microbiol. scand.* 28. 36-39.

See also absts. 3337 (D.D.T. and benzene hexachloride for control of piroplasmosis); 3411 (report, Canada); 3412 (report, Australia); 3416 (report, British Guiana); 3418 (report, East Africa); 3419-3420 (reports, Zanzibar); 3421 (report, Northern Rhodesia); 3422 (report, Sierra Leone); 3429-3430 (report, U.S.A.); 3432 (book, zoology).

DISEASES CAUSED BY VIRUSES AND RICKETTSIA

GALLOWAY, I. A. (1948.) Consideration of some important aspects of recent investigations on foot-and-mouth disease.—*Proc. 4th Internat. Congr. Trop. Med. Malar.* pp. 1374-1385. 3205

Recent investigations into F. & M. disease were outlined and discussed. Quantitative studies of virus potency and the limitation of tests for non-infectivity of vaccines were reviewed and the titration methods used by Henderson were described briefly. Research into the potency of vaccines has furnished reliable data. Field trials are not regarded as satisfactory in view of the number of outside factors involved. It was shown that strains of virus have different immunogenic properties

[In English. Abst. from authors' summary.] 3203

The preparation of an antigen extracted in saline by quick freezing and thawing for use in the complement-fixation test, prepared from peritoneal exudate from mice infected with *Toxoplasma gondii* is described. The antigen was water soluble, non-anticomplementary and fixed complement specifically in the presence of human immune serum.

STEEN, E. (1950.) Acute experimental toxoplasmosis treated with aureomycin.—*Acta path. microbiol. scand.* 27. 844-850. [In English. Abst. from author's summary.] 3204

Aureomycin was effective in the treatment of acute toxoplasmosis in white mice, but the infection was only suppressed. The recovery rate depended on the time at which treatment was begun. When treatment was instituted 48 hours after the inoculation or later, no animals survived, but they did not die as soon as the untreated group. When treatment was begun simultaneously with the infection, all mice recovered. These facts indicate that the drug will probably be useless or only of limited value in the treatment of a human case where diagnosis can be made only after the symptoms have become manifest.

Aureomycin did not kill the toxoplasma *in vivo*, but only aided in producing the carrier state. In every instance tested the cured mice proved to be carriers and were immune to new infection with toxoplasma.

Aureomycin is effective against toxoplasma *in vitro* but only in high concentrations which are unobtainable *in vivo*.

against a strictly homologous virus infection and that there are differences in antigenic structure of strains within the main immunological group. The need for intensive research into conditions and factors involved in the spread of disease was emphasized.—G. V. LAUGIER.

ARAMBURU, H. G. (1949.) La prueba de fijación del complemento para tipificación del virus aftoso. [The complement-fixation test in the typing of foot and mouth disease virus.]—*Publ. Lab. Invest., B. Aires.* No. 5. pp. 1-9. 3206

The author confirms the efficacy of the complement-fixation test in the identification of the serological types of F. & M. disease

virus. In material from 51 cattle the distribution of types was: 22 Type O, 10 Type A, 4 Type C, 6 doubtful or atypical and 9 gave no result.

The buccal epithelium used as antigen was collected without any regard for temperature, often under poor conditions, but this did not affect the results of the test.

—I. W. JENNINGS.

BLANC, R. A. (1949.) Las reinoculaciones en la inmunidad cruzada para determinar tipos de virus aftoso. [**Cross-immunity tests in the typing of foot and mouth disease virus.**]—*Publ. Lab. Invest., B. Aires.* No. 8. pp. 1-7. 3207

Tests were carried out on cattle and g. pigs in order to determine the period of immunity following inoculation with O, A and C viruses.

Of five immunized cattle re-inoculated with Type A virus, four retained their immunity for 108, 109, 181 and 179 days respectively. The fifth had lost its immunity by the 111th day. With Type O virus, two cattle out of five retained their immunity for 97 and 168 days respectively and three had lost their immunity after 165 days. Five cattle re-inoculated with Type C virus retained their immunity after 76 days. G. pigs retained their immunity for at least seven months.

B. concluded that in the typing of F. & M. disease virus by cross-immunity tests, immunized cattle cannot be relied upon after three months.—I. W. JENNINGS.

BROOKSBY, J. B. (1950.) **Strains of the virus of foot-and-mouth disease showing natural adaptation to swine.**—*J. Hyg., Camb.* 48. 184-195. 3208

An account is given of two strains of foot and mouth disease virus which showed adaptation to swine. Passage of strain 643 in cattle gave rise to some difficulty and a gradual failure to produce lesions occurred. In pigs there was no such difficulty and symptoms were severe. Spread by contact in cattle failed in all but one instance, whilst in pigs spread was rapid. Its use as a vaccine after passage is described and a hundredfold difference in titre between cattle and pigs was observed.

Similar work with strain 672 revealed similar characteristics but to a lesser degree. It is regarded as essential to transmit the disease by contact in studies of species adaptation.—G. V. LAUGIER.

EPSTEIN, B. & GURRI, J. (1949.) Consideraciones histopatológicas sobre la fiebre aftosa. I. Lesiones del corion y músculos linguales.

[**Histopathology of foot and mouth disease. I. Lesions on the corium and the lingual muscles.**]—*An. Inst. Hig., Montevideo.* 3. 21-43. [Abst. from English summary.] 3209

The histopathology of the corium and muscles was studied in the tongues of experimentally infected cattle. Lesions of the germinative epithelium and corionic vessels of the tongue showing acute and subacute changes of the muscular fibres were observed.

Silver techniques revealed:— (1) Changes of the motor and sensory nerve fibres consisting of: (a) argentophilic changes, disintegration of the neurofibres and homogenization; (b) fading of the limits of the fibre, fusiform and varicose enlargements homogeneously impregnated; (c) varicosities, vacuole-like appearance due to a net-like distribution of the argentophilic substance; and (2) Motor end changes consisting of:— (a) marked argentophilia; (b) fragmentation and reduction of the number of branches; (c) enlargement of the branches which may even form spheroidal masses which afterwards suffer a disintegration process.

The authors consider these changes to result from a neuritic process similar to that described by other authors in various types of peripheral nervous affections caused by toxic agents.

BLANC, R. A. (1949.) Acción de los diferentes factores sobre la evolución de las lesiones aftosas. [**Factors influencing the development of the lesions in foot and mouth disease.**]—*Publ. Lab. Invest., B. Aires.* No. 4. pp. 1-6. 3210

B. discussed the effects on the development and healing of aphthous ulcers, of secondary bacterial invasion, heat, cold and mechanical injury, and chemical agents. No new knowledge.—I. W. JENNINGS.

BASSET, J. (1951.) Fièvre aphteuse. Le vaccin de Waldmann et sa posologie. Origine des anticorps et mécanisme de l'immunité. [**The dose of the Waldmann foot and mouth disease vaccine.**]—*Bull. Acad. vét. Fr.* 24. 21-29. 3211

Virulence is regarded as a function of the number of infective particles in a given amount of medium. This leads to criticism of vaccines, particularly the Waldmann vaccine, which originally contained 0.42 g. of each virus and is now reduced to one quarter of the original dose with consequent reduction in the duration of immunity. Experiments with monovalent vaccines are quoted in support of this. It is concluded that the quantities recommended at the Berne Conference are insufficient.

—G. V. LAUGIER.

BELIN, CL. (1951.) Le contrôle officiel du vaccin antiaphteux Belin. [Official control of the Belin foot and mouth disease vaccine.]—*Rev. Méd. vét., Lyon et Toulouse*. 102. 17-24. 3212

This is a criticism of official tests carried out on the Belin F. & M. disease vaccine. Difficulty was experienced in ascertaining the nature of these tests. Some details were finally obtained and these are described. It is concluded that despite the non specific nature of the tests, the enormous test doses employed and the lengthy period of observation, the proportion of animals remaining resistant fell within international requirements. It is felt that the trials were of unusual severity, such as are not normally applied to foreign vaccines and that this resulted in condemnation of the vaccine.

—G. V. LAUGIER.

HANSEN, A. & HOLM, P. (1950.) Combination of foot and mouth disease virus, albumen and protamine.—*Acta path. microbiol. scand.* 27. 882-887. [In English. Authors' summary modified.] 3213

The F. & M. disease virus unites with serum albumin and protamine into a compound which at low electrolyte concentrations is insoluble in water. The compound contains F. & M. disease virus which has lost none of its potency. Appropriate irradiation of the virus-albumin-protamine compound with ultra-violet rays will cause the virus to lose its toxicity, but it retains its antigenic efficacy.

TUNÇMAN, Z. M. (1949.) Yeni bir Aujeszky vak'ası. [New observation of Aujeszky's disease.]—*Mikrobiyoloji Dergisi*. 2. 233-236. [English and French summaries.] 3214

Description of a case in a cat in Istanbul. Inoculations and serial passages in rabbits confirmed the possibility of Aujeszky's disease. Brain tissue diluted a million times was still infective. Up to the present, 26 cases of this disease have been reported in Turkey.

—N. KARAMIZRAK.

WIŚNIEWSKI, J. (1950.) Zastosowanie streptomycyny i penicyliny w rozpoznawczym szczepieniu białych myczy na wściekliznę. [The use of streptomycin and penicillin in the diagnostic inoculation of white mice for rabies.]—*Ann. Univ. M. Curie-Skłod.* 5. 71-94. [English summary.] 3215

The use of streptomycin and penicillin in carefully adjusted concentrations enables a correct diagnosis by mouse inoculation test to be made on putrefied brain in 82% of cases. Putrefaction was found to prolong the incuba-

tion period to 15 days. Demonstration of Negri bodies presented no difficulties.

—JOHN R. MITCHELL.

CABRAL, A. (1948.) A profilaxia da raiva na cidade de Lisboa. [Antirabic prophylaxis in Lisbon.]—*Rev. Med. vet., Lisboa*. 43. 19-35. 3216

Prophylactic measures against rabies in Lisbon include the registration of dogs, capture of stray animals, segregation and observation of suspected cases of rabies and the destruction of verified cases. Yearly campaigns of vaccination are carried out on all dogs except those which are obviously sick or pregnant.

—I. W. JENNINGS.

ÇİLELİZ, A. (1949.) Türkiye'de Semple usulü ile kuduz aşısı tatbikati ve 16 senelik (1933-1948) neticeleri. [Sixteen years experience of Semple rabies vaccine in Turkey.]—*Türk İjiyen ve Tecrübi Biyoloji Dergisi*. 9. 24-56. [French summary.] 3217

In preventive treatment of human cases from 1932-34 by the Semple method, 14 days' treatment was allowed in some cases with a total injection of 560 mg. of brain tissue, but for certain cases the period was 20 days with injection of 1,600 mg. of brain tissue. A 2% suspension of brain was used and phenol at 0.5%. In 1935 the proportion of brain tissue was increased to 3%, and in 1944 to 5%, the total amount of nervous tissue injected being correspondingly increased. In 1937 the period of treatment was increased to 24 days for severely bitten cases. In 1933-48 of over 55,000 treatments, 70 cases died, and 11 cases developed paralytic symptoms, of which 2 died. Of the total cases reported during these years, 75.7% were bitten by dogs, 6% by cats, 0.4% by wolves, 1.1% by jackals, 3.4% by solipeds, 3.2% by ruminants and 5.5% by other animals.

—S. İSPIR.

TUNÇMAN, Z. M. (1950.) Türkiye'de Kuduz Epidemiyolojisi Kuduzla savaş. [Epidemiology and control of rabies in Turkey.]—*Mikrobiyoloji Dergisi*. 3. 257-282. [English and French summaries.] 3218

According to the official Turkish statistics some 80% of human cases originate from dogs, 2-5% from cats and the rest from other sources. During 16 years in Istanbul 70% of human cases came from dogs and 12% from cats, while from statistics gathered from 90 centres in Anatolia 75.7% derived from dogs and 6.3% from cats. The records of the Rabies Institute at Istanbul showed that of 6,154 dogs and 1,126 cats taken for observation, 531 dogs

and 154 cats had symptoms of rabies. Before 1923 the number of cases of furious rabies was small, but they have increased in recent years. In 70 human cases the period of incubation was observed to be under 30 days. No cases have been seen in hens and ducks bitten by rabid animals.—S. ISPIR.

DOGRA, J. R. (1950.) **Rabies control in India.**
—*Indian vet. J.* 26. 494-497. 3219

D. discussed the present position of rabies in India and the importance of proper legislation and public co-operation to the success of any campaign for the control of the disease. As it would take time before proper legislation could be enacted and strong mass opinion rallied for carrying out this programme, he considers that a start should be made by vaccinating dogs in the affected localities, using the 'single dose vaccine' evolved at the Haffkine Institute, Bombay, which, however, is still in the experimental stage.—J. M. LAL.

HABEL, K. (1947.) **Ultraviolet irradiation in the production of potent antirabies vaccines.**
—*Publ. Hlth Rep., Wash.* 62. 791-800. 3220

Highly potent rabies vaccines were prepared by the use of the Levinson-Oppenheimer ultra-violet technique and apparatus in the irradiation of rabies brain suspension. The exposure necessary to inactivate the virus was between 0.34-0.72 sec. with brain emulsions up to 20% concentration.

Irradiated vaccines were more potent than comparable phenolized vaccines and were satisfactorily stored at 4°C.—E.V.L.

MACDONALD, A. & DOWNIE, A. W. (1950.)
Serological study of the soluble antigens of variola, vaccinia, cowpox and ectromelia viruses.—*Brit. J. exp. Path.* 31. 784-788.
[Authors' summary copied *verbatim*.] 3221

The antigenic relationships of the viruses of variola, alastrim, vaccinia, cowpox and ectromelia have been studied, using heated soluble antigens for serological tests. After being heated at 68-70°C. for 1 hour, the soluble antigens of ectromelia and alastrim viruses, like those of variola and vaccinia, still retain a portion of their potency. This indicates that they both have heat-labile and heat-stable antigenic components.

Complement fixation tests with rabbit antisera and heated soluble antigens of mammalian or egg origin did not serve to differentiate clearly the members of this group of viruses. Reactions were, however, stronger with homologous than with heterologous systems.

By the inhibition of complement fixation

method with heated antigens it was confirmed that the soluble antigens of cowpox and ectromelia viruses bear a closer relationship to each other than either does to the variola-vaccinia viruses. The heated antigens retain the same serological specificity as do the native antigens, indicating that such antigenic differences as are demonstrable are not specifically associated with the labile component of the LS antigens.

DOWNIE, A. W. & MCCARTHY, K. (1950.)
The viruses of variola, vaccinia, cowpox and ectromelia. Neutralization tests on the chorio-allantois with unabsorbed and absorbed immune sera.—*Brit. J. exp. Path.* 31. 789-796. [Authors' summary slightly modified.] 3222

A comparative serological study has been made of the viruses of ectromelia, cowpox, vaccinia and variola by means of neutralization tests on the chick chorio-allantois using virus strains propagated in this tissue and immune sera prepared in fowls.

Although cross neutralization tests using undiluted sera had failed to distinguish these viruses from each other, differences were revealed by titrating each serum for neutralizing activity against each virus strain. Differences were also demonstrable by the use of absorbed sera for neutralization tests. There was no complete cross absorption between any pair of these viruses and their antisera and it seems that no two of them are antigenically identical. The experiments failed to differentiate the viruses of variola and alastrim.

SMITH, W. & WESTWOOD, J. C. N. (1950.)
Influenza virus haemagglutination. The mechanism of the Francis phenomenon.—*Brit. J. exp. Path.* 31. 725-738. [Authors' summary slightly modified.] 3223

Prolonged heating of Influenza A virus causes a progressive degradation, which results in a progressive increase of the Francis effect [*V.B.* 18. 157] as long as any haemagglutination activity remains. The Francis effect is demonstrable equally at room temperature and at 2°C. The heated virus: living virus titre ratios of a virus are the same at the two temperatures. Heat treatment of virus, sufficient to convert it to a good indicator of the Francis effect, does not appreciably affect the power of a given number of agglutinating doses to absorb serum inhibitor. Over a wide range of dosage both total combining capacity and rate of combination remain unchanged. The situation is not affected by the presence of agglutinable red blood cells in the reaction mixtures.

The significance of these findings is discussed, and a new hypothesis is presented to explain the mechanism of the Francis phenomenon.

WOJCIECHOWSKA, S. (1950.) Wirusowe ronienie klaczy, ciała wtrętowe w tkankach płodów. [**Virus abortion of mares and inclusion bodies in the tissues of aborted foetuses.**]—*Med. weteryn.* 6. 209-213. [English and Russian summaries.] 3224

Dimock intracellular inclusion bodies were demonstrated in eight aborted foetuses, using Ehrlich's haematoxylin and 1% eosin. The lungs are the most suitable material. Abortions usually occur at 8-10 months. The macroscopic picture, although characteristic, is not diagnostic.—JOHN R. MITCHELL.

HANSEN, P. (1949.) Bekaempelsen af Kvaegpesten i det 18. Aarhundrede og Udviklingen af det offentlige Veterinaervæsen. [**Control of rinderpest in the 18th century and development of the public veterinary service.**]—*Maanedsskr. Dyrlæge.* 61. 1-24 & 25-37. 3225

A historical review.—P. SCHAMBYE.

ERDOL, Z. (1945.) Memleketimiz koyunlarında (Mavi dil) ârazi ile seyredilen yeni virüs bir hastalık. [**A new virus disease of sheep with the symptoms of bluetongue.**]—*Türk Veterinerler Cemiyeti Dergisi.* 13. 11-23. [English summary.] 3226

A disease of sheep in some districts near the Syrian border with symptoms of blue tongue was first seen in Sept.-Dec. 1944. Sheep kept on plateaux remain free, while those in the valleys regularly contracted it even though the flocks were segregated. Cases disappear with the onset of cold weather. The disease was transmissible to healthy animals by intravenous injection of blood taken at the height of fever. Berkefeld N filtrates of blood diluted in Tyrode fluid also set up the disease, and serial transmission was proved possible. Citrated blood was infective after cold storage for 2½ months. The disease was not transmissible by close contact. The virus could not be definitely identified, since no known bluetongue virus was available for comparison.—R. DURASAN.

TAMER, Y. (1949.) Hatayda Koyunlarda Mavidil hastalığı ve beş senelik vukuatı. [**Bluetongue disease of sheep in Hatay (Turkey) and losses over five years.**]—*Türk Veteriner Hekimleri Dergisi.* 19. 543-548. [French summary.] 3227

The disease started in Hatay and in a relatively short time spread over a large area

causing much loss. In the infected regions, of 10,771 sheep exposed 4,918 became infected and 2,712 of them died. The form was acute, with all the classical symptoms of bluetongue. It reappeared every year from 1945-48, always in October, but in benign form attacking relatively few animals and with a mortality not exceeding 2%. The whole country was free in 1949. The causal agent was said to have been isolated and identified.—R. DURASAN.

GREIG, J. R. (1950.) **Scrapie in sheep.**—*J. comp. Path.* 60. 263-266. 3228

The sequence of events which have led to the identification of some of the characteristics of the disease are described.—G. V. LAUGIER.

VAITSMAN, J. & ABDALA, O. (1949.) Sobre a possibilidade de transmissão da tuberculose pela vacina cristal violeta. [**The possible transmission of tuberculosis by crystal violet swine fever vaccine.**]—*Resenha Vet.* 3. No. 6. pp. 1-10. 3229

Although Brazilian law requires animals destined for the production of vaccines and sera to be quarantined, tuberculin tested, and tested serologically for brucellosis, the authors discuss the possibility that dissemination of TB. by crystal violet swine fever vaccine may occur, should a tuberculous animal be utilized as a source of virus. After limited experiments on g. pigs they came to the conclusion that the strengths of phenol and crystal violet normally used are adequate to kill tubercle bacilli.

—J. T. DONE.

VENTURI, P. (1948.) Osservazioni clinico-epidemiologiche su una nuova malattia dei suini riferibile al "morbo di Teschen". [**Clinical observations on the epidemiology of a new disease of swine comparable to Teschen disease.**]—*Zooprofilassi.* 3. 241-244. 3230

The author notes the occurrence of several outbreaks throughout Italy of a disease in pigs closely resembling Teschen disease. He describes in detail symptoms and lesions, and for prophylaxis suggests attention to disinfection of piggeries, and segregation of newly acquired stock.—I. W. JENNINGS.

MANNINGER, R. (1951.) Przyczyny i zwalczanie nagminnego zapalenia płuc u prosiąt. [**The aetiology and control of enzootic broncho-pneumonia in piglets.**]—*Med. weteryn.* 7. 9-10. 3231

M. recognizes two forms of broncho-pneumonia in piglets, the first caused by a virus and the second by exposure to cold. In practice, however, it is difficult to differentiate these two forms. Secondary invaders occur, those most

frequently met being *Haemophilus influenzae-suis*, *Bact. viscosum equi* and *Corynebacterium pyogenes*. In cases where virus is absent, the predisposing cause is almost entirely low temperature of the piggery, hence the condition has been called "cement disease". A nutritional factor is said also to play a part, mainly calcium and phosphorus. In piggeries the division between pens should be substantial; infected animals should be segregated. As curative treatment sulphonamides and penicillin are advocated.—JOHN R. MITCHELL.

STEIN, E. (1951.) Die Heilungsaussichten bei der Behandlung der nervösen Staupe. [**Prognosis in canine distemper.**—*Dtsch. tierärztl. Wschr.* 58. 5-7. 3232

S. states that about 10% of dogs with the nervous form of distemper commonly recover. Of 206 cases he treated, however, 71 (35%) recovered. Emphasis is laid on the need for patient treatment and prolonged nursing. In 61 of these 71 cases recovery was complete.

Specific and general therapy included distemper antiserum, sedatives, darkness and quiet, nerve stimulants, and physical rehabilitation therapy. The case records are statistically considered from various viewpoints.—J. EDWARDS.

MARTIN, L. A., GORET, P., JOUBERT, L. & TOUCAS, L. (1950.) Transmission au lapin d'un virus isolé du névraxe de chiens atteints de "formes nerveuses de la maladie". Confirmation des résultats acquis. Identité des diverses souches et homologation au virus de Carré. [**Transmission to rabbits of the canine distemper virus.**—*Bull. Acad. vét. Fr.* 23. 299-304. 3233

Adaptation to rabbits of virus from dogs with symptoms of "hard pad" disease is claimed.—ALASTAIR N. WORDEN.

AUBERT, A. (1950.) Action de la vitamine B₁₂ dans les complications neurologiques de la du jeune chien. [**Vitamin B₁₂ in treatment of nervous distemper in dogs.**—*Rev. Path. comp.* 50. 520-524. 3234

Vitamin B₁₂ had an immediate and rapid action in four cases of nervous distemper in dogs.—N. DEAN.

BLANC, G., BRUNEAU, J. & MARTIN, L. A. (1948.) La pneumopathie du cobaye est transmissible à l'homme et à certains animaux sous forme inapparente. [**A respiratory disease in g. pigs transmissible to man in an inapparent form.**—*C.R. Acad. Sci., Paris.* 227. 787-788. 3235

Transmission experiments with pneumopathic g. pig virus showed that although the

virus is highly lethal to g. pigs, it does not cause symptoms of disease in other species. The virus, however, could be transmitted to man, the monkey, goat, dog, rabbit, donkey and camel, the development of antibodies being demonstrated in each case.—J. A. NICHOLSON.

ANDREWES, C. H. & NIVEN, J. S. F. (1950.) **Chemotherapeutic experiments with grey lung virus.**—*Brit. J. exp. Path.* 31. 767-772. [Authors' summary copied *verbatim*.] 3236

Infection of mice with grey lung virus is remarkably susceptible to therapy with aureomycin. Lung lesions, even chronic ones, are quickly resolved and virus wholly eliminated. Cured mice are susceptible to re-infection with the virus. Terramycin is also active, but chloromycetin, penicillin, streptomycin and sulphamerazine are therapeutically ineffective.

ANDREWES, C. H. & NIVEN, J. S. F. (1950.) **A virus from cotton-rats: its relation to grey lung virus.**—*Brit. J. exp. Path.* 31. 773-778. [Authors' summary copied *verbatim*.] 3237

A virus transmissible to mice has been recovered from lung lesions in normal cotton-rats [*Sigmodon hispidus*]; some of its properties are described. It differs from grey lung virus in its lower level of activity in mice, in the slower evolution of the lesions produced and in their naked-eye and histological appearances. It resembles grey lung-virus in the remarkable chronicity of the disease produced, and in its susceptibility to aureomycin and terramycin. The two agents may be biological variants of a single virus, or two members of an unusual group of organisms.

ZUYDAM, D. M. (1951.) Onderzoek naar de verspreiding van pseudovogelpestvirus door wilde ratten. [**Wild rats as possible carriers of Newcastle disease virus.**—*Tijdschr. Diergeneesk.* 76. 237-242. 3238

Newcastle disease virus could not be isolated from the faeces, the liver, the spleen or the skin of 12 wild rats from an infected farm. Eight wild rats were fed on muscle, brain and liver of chickens that had died of Newcastle disease. Faeces were examined for six days. Virus was not demonstrated, either by animal experiment or by inoculation in incubated hens' eggs (faeces suspended 1.5 ml. in 0.9% NaCl solution with 2,500 i.u. penicillin and 200 i.u. streptomycin). Four out of five other wild rats fed on egg culture (a whole egg, embryo-minimal-lethal dose less than 10⁶ ml.) excreted the virus for 1-2 days.

The wild rat is considered of little importance in the spread of Newcastle disease.

—C. A. VAN DORSSSEN.

ILERI, S. Z. (1950.) Türkiye'de seyreden ve tavuk vebasi ismiyle anilan hastaligin mahiyeti, Newcastle hastaligi üzerindeki serolojik denemeler. [True nature of "fowl plague" of Turkey: serological experiments on Newcastle disease.] — *Türk Veteriner Hekimleri Dernegi Dergisi*. 20. 27-36. [English summary.] 3239

Further report of identification of fowl plague in Turkey as Newcastle disease. Strains of virus isolated were identified by haemagglutination-inhibition and serum-neutralization tests, using for comparison viruses and sera from England and Palestine.—R. DURUSAN.

NECHVATAL, W. (1950.) Praxisbericht über das Virus N. [The virus of Newcastle disease, report from practice.] — *Tierärztl. Umsch.* 5. 329-330. 3240

Report on an outbreak, clinically resembling fowl plague, in chickens. In spite of vaccination with fowl plague vaccine [nature not given] the disease spread, but was brought to a complete standstill by vaccination with Newcastle disease chick embryo vaccine.

—A. MAYR-HARTING.

GUSTAFSON, D. P. & MOSES, H. E. (1951.) Isolation of Newcastle disease virus from the eye of a human being.—*J. Amer. vet. med. Ass.* 118. 1-2. 3241

The authors report the isolation of Newcastle disease virus from a veterinarian employed in poultry diagnostic work. There was a moderate degree of inflammation in the right eye. Virus was demonstrated in eye washings by chick embryo inoculation tests.—D. LUKE.

DE BOER, E. & DONKER-VOET, J. (1950.) Pseudovogelpest (Newcastle disease) onderzoek naar de waarde van een tegen virusziekten aanbevolen geneesmiddel. [Newcastle disease; an investigation into the qualities of a remedy recommended against virus diseases.] — *Hemera Zoa.* 57. 765-773. [English, French and German summaries.] 3242

A commercial "biological product" of undisclosed nature was tested as a cure for Newcastle disease. No valuable action was demonstrable.

GEURDEN, L. M. G., DEVOS, A. & MORTELMANS, J. (1950.) Immunisatieproeven tegen pseudovogelpest. [Newcastle disease immunization.]

—*Vlaam. Diergeneesk. Tijdschr.* 19. 177-194. [English, French and German summaries.] 3243

The authors give the results of large-scale trials of vaccination against Newcastle disease in Belgium, using inactivated adsorbed chick-embryo vaccine, living vaccine (Hertfordshire strain) and double vaccination on about 10,000 fowls.—J. DEOM.

ILERI, S. Z. (1950.) Newcastle (Y. Tavuk vebasi) hastaligina karşı müessesemizde ilk defa olarak hazırladığımız canlı yumurta ambriyon asisi ve denemelerden aldığımız sonuçlar. [Living embryo virus vaccine for Newcastle disease.] — *Türk Veteriner Hekimleri Dernegi Dergisi*. 20. 333-348. [English summary.] 3244

Living Newcastle disease vaccine was prepared from the Komorov strain. It was used intramuscularly in dose of 1.0 ml. 10^{-3} dilution of pooled allanto-animotic fluid, chorio-allantoic membrane and embryo. To test immunity, 10 million lethal doses were used. In this way 80 cockerels, previously negative to the haemagglutination-inhibition test, were tested 14 days after vaccination, together with 20 controls, with the clear result that all the vaccinated resisted and all the controls died within three or four days. The haemagglutination-inhibition test confirmed that there was no spread of infection in this experiment from vaccinated to control birds. The vaccine was also used on 3,000 cockerels and laying birds belonging to a poultry institute. There were no deaths but slight decrease in egg production was seen in some of the laying birds.—R. DURUSAN.

MARTINI, I. & KURJANA, R. (1950.) Newcastle disease (pseudovogelpest). Experiments on an attenuated Indonesian virus.—*Hemera Zoa.* 57. 557-571. [In English: French and German summaries. Abst. from English summary.] 3245

The highly virulent Indonesian strain Suminta I of Newcastle disease virus could be converted into two strains through intracerebral passages in ducklings and striped ground-doves (*Geopelia striata*).

Both strains were non-pathogenic when applied parenterally, and met the requirements of a good vaccine virus.

TRENCHI, H. (1950.) Sinusitis infecciosa de los pavos. [Infectious sinusitis of turkeys in Uruguay.] — *Bol. mens. Direcc. Ganad. Urug.* 31. 379-382. 3246

T. notes the occurrence in Uruguay of infectious sinusitis of turkeys, with involvement

sometimes of the bronchi, lungs and air-sacs. The aetiology is unknown. For treatment he uses 4% silver nitrate, and if the exudate has become caseated it is removed surgically.

—I. W. JENNINGS.

MOLLARET, P. (1950.) Le démembrement de 'la poliomyélite'. IV. Maladies pseudo-poliomyelitiques vétérinaires synthèse et perspectives. [**Poliomyelitis. IV. Pseudo-poliomyelitic diseases of animals.**]—*Pr. méd.* 58. 1255-1260. 3247

M. describes in great detail the pathology and epidemiology of the two animal diseases which have a resemblance to human poliomyelitis, *i.e.*, Theiler's disease of mice, and Teschen disease. Similar diseases have been described in various other animals, but these have not been adequately studied. The author affirms that human poliomyelitis and these animal diseases are all distinct entities, confined in their pathogenicity to one particular species or a few closely related species, and that no cross infection over a wider range of hosts ever takes place. But by considering various forms, intermediate with regard to their range of hosts and to their pathology, like the Lansing strain and others, it is possible to devise a scheme of classification based on what may logically have been the order in which all these virus forms developed. M. anticipates a unification of the group from the therapeutic angle, just as the group of rickettsia are linked by their sensitivity to chloromycetin.—A. MAYR-HARTING.

STEIGMAN, A. J. & SABIN, A. B. (1949.) **Antibody response of patients with poliomyelitis to virus recovered from their own alimentary tract.**—*J. exp. Med.* 90. 349-372. 3248

Virus isolated from the intestinal tract of patients with poliomyelitis was neutralized by their own sera. This neutralizing antibody was found in the acute as well as in the convalescent stage, although it had increased in the latter. Tests with the Lansing virus on the same sera indicated the specificity of the antibody response.

—JAMES H. HALE.

OLITSKY, P. K. & MURPHY, L. C. (1950.) **Effect of prolonged storage at 4 to 5°C. on the neutralizing antibody of antiserum against poliomyelitis virus.**—*J. Lab. clin. Med.* 36. 163-166. [Authors' summary slightly modified.] 3249

Seven samples of old, stored antisera against poliomyelitis virus were investigated by means of the mouse intracerebral test. The sera were obtained from a horse immunized with

monkey-C.N.S. virus as antigen, from rhesus monkeys convalescent after experimental paralytic poliomyelitis induced by strains other than that used in the horse, from a large number, pooled, from human beings convalescent from the paralytic disease, and from an apparently normal adult who harbored antibody against the MEF1 virus. The sera were kept in an icebox at 4° to 5°C., unfrozen, for periods of time lasting more than seven to more than twenty years. At the end of these periods six of the seven, undiluted, were tested for neutralization of graded dilutions of virus, and most of these including a seventh serum, in different dilutions, against a constant amount of virus. An appreciable amount of antibody was found in all. The prolonged cold storage, in one instance for thirty-one years, did not confer on the normal sera here studied a capacity for nonspecific neutralization.

BANG, F. B. (1949.) **A factor in old hepatitis serum capable of agglutinating chicken red cells.**—*Johns Hopk. Hosp. Bull.* 84. 497-506. [Author's summary modified.] 3250

A factor capable of agglutinating chicken red blood cells was found in old hepatitis sera. This factor, which would agglutinate only cells from certain chickens, was present in high concentrations, particularly during the first 15 days of illness. During this time, 8 of 19 sera were positive in titers of 1/600 to 1/15,000. Thereafter a total of 59 sera yielded six that were positive with a titer of 1/60 to 1/1,260. The factor was not directly related to the original bilirubin level of the plasma nor to the occasional bacterial or fungous contaminant.

The factor was not sedimented by a gravitational field of 50,000-90,000 for one hour which might mean that it was well below 50 m μ in size. It did not dialyze through a collodian sac.

On the basis of the above evidence it is possible that this agglutination was caused by the virus of infectious hepatitis which had been unmasked by long storage and/or bacterial growth, but it is more likely that bacterial contaminants or persisting metabolic products of bacteria are responsible.

WATSON, J. D. (1950.) **The properties of X-ray-inactivated bacteriophage. I. Inactivation by direct effect.**—*J. Bact.* 60. 697-718. 3251

Investigations of inactivation by X-rays of bacteriophages of the T group indicated a one-stage inactivating mechanism. All the inactive particles were able to adsorb on sensitive bacteria, but only a fraction of them retained the

ability to kill bacteria or to inhibit lysis by other phage types. When the ability to kill bacteria was destroyed by X-rays, the phage still retained the ability to inhibit lysis by other phage or to lyse bacteria from without. This indicated two stages in the early period of the phage reproduction: "adsorption" on to the surface of the bacterium, and "invasion" which causes the destruction of the nuclear apparatus of the host bacterium. Multiplicity inactivation and photoreactivation of X-ray-inactivated phage were observed in slight amounts.

—L. M. JONES.

GIRARD, H. & ROUSSELOT, R. (1947.) Les rickettsioses animales au Soudan. [**Rickettsial infections in the Sudan in cattle, sheep and dogs.**]—*Encyclopéd. vét., périod.* 4. 403-418. 3252

Four types are recognized in cattle; an acute form in which the main characteristic is a unilateral or bilateral ear-drop, an acute type rarely seen, a subacute form in which ear drop may be the only symptom and a chronic form with enlargement of the lymph nodes and gross emaciation. P.M. findings are largely confined to lymphatic changes. Disease is usually associated with a breakdown in natural immunity following neglect and massive tick invasion. Differential diagnosis is discussed with particular reference to heartwater and *Theileria parva* infections; the latter is believed to be very rare in the Sudan.

Disease in sheep is described and it is shown that both endothelial and monocytic rickettsial infections can coexist in the same animal. The pathogenic role of *R. ovina* has yet to be proved.

In dogs two forms are recognized, a latent or Mediterranean type and an acute form in which ear shaking is a feature. It is maintained that in the dog rickettsial infection is mainly lymphatic. Heartwater in cattle, sheep and goats is described.—G. V. LAUGIER.

ANON. (1949.) Balkangrippe bei der Ziege. [**Q fever in goats.**]—*Mh. prakt. Tierheilk.* 1. 131. 3253

Goats artificially infected with *Rickettsia burneti* gave infected milk during the febrile stage of the disease and for the following three months. Healthy animals in the herd became infected.

In view of the importance of the goat as a

milk-producing animal in Mediterranean countries, it may play an appreciable part in the spread of human Q fever. This conclusion is supported by the circumstance that many outbreaks of Q fever occur in tick-free seasons, although the tick must still be regarded as the chief transmitter of the disease to domestic animals.—E.V.L.

RANKING, D. L. (1950.) **Q fever: Serological evidence of the occurrence of another case in South Africa.**—*S. Afr. med. J.* 24. 1006-1007. [Author's comment copied *verbatim*.] 3254

The serological findings in this case are strong evidence that this patient had Q Fever, which was probably contracted from drinking infected milk.

It is interesting to note the poor response to Chloromycetin in this case, for which no explanation can be given.

YAMAFUJI, K., FUJII, S. & AKITA, T. (1950.) Ueber die chemischen Prozesse bei der künstlichen Virus-Erzeugung im lebendigen Körper. [**The chemical process of virus production in the living body.**]—*Enzymologia.* 14. 24-29. [Abst. from English summary.] 3255

In the formation of virus particles it was assumed that normal protoplasm proteins must first be denaturated and then rearranged. This assumption is supported in the present experiments by the determination of sulphhydryl groups and protease activity. The action of hydroxylamine on the production of virus is also described.

YAMAFUJI, K., AKITA, T. & INAOKA, M. (1950.) **Experimental production of silkworm virus under sterile conditions.**—*Enzymologia.* 14. 164-169. In English. [German summary. Authors' summary slightly modified.] 3256

Silkworms were fed with acetoxime, hydroxylamine or potassium nitrite under sterile conditions. It was found that by such treatment about half of the worms were attacked with a virus disease. The oxime content of silkworms was greatly increased not only by the feeding of these chemicals, but also by the heating of worm bodies. By the action of acetoxime, an accumulation of hydrogen peroxide took place in the body of the silkworms. Thus it is claimed that virus formation can be caused by chemical action.

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OAKLEY, C. L., BATTY, I. & WARRACK, G. H. (1951.) **Local production of antibodies.**—*J. Path. Bact.* 63. 33-44. [Authors' summary copied *verbatim*.] 3257

After a single secondary injection of diphtheria and tetanus alum-precipitated toxoid [A.P.T.] into the skin, fat or voluntary muscle of rabbits or guinea-pigs, specific antitoxin may be produced in the injected tissues. No evidence of antibody production can be obtained in the liver, spleen, kidney or bone-marrow similarly injected.

Examination of the change with time in the antitoxin ratios in the skin of rabbits injected with tetanus and diphtheria A.P.T. suggests that the changes in the circulating antibody after a secondary stimulus are in part a reflection of activity in the antibody-producing areas. No evidence has been obtained that a single subcutaneous secondary injection of diphtheria or tetanus A.P.T. will elicit local production of antitoxin in the horse.

LEHNERT, E. (1947.) Autoisoantikörper als physiologische Substanzen im Pferdeblut. [Natural iso-antibodies in horse blood.]—*Skand. VetTidskr.* 37. 278-296. [Abst. from English summary.] 3258

In serum and plasma of normal horses belonging to the A, B and AB blood groups auto-isoantibodies of types α and β respectively have been regularly found present in isotonic reaction medium with a low salt concentration. These antibodies must, therefore, be considered to be physiological substances. The fact that no changes in the autologous erythrocytes occur under natural conditions (*in vivo*), in spite of the presence of autoisoantibodies in horse blood, is apparently due to the effect of protective colloids. The function of these colloids is to prevent an adsorption of the autoisoantibodies to the autologous erythrocytes. This protective mechanism is deranged in a medium with a low salt concentration (*in vitro*) with the result that the autoisoantibodies—which under normal conditions are concealed by protective colloids—then appear unimpeded in the test tube. Taking this observation into consideration, there is

See also absts. 3137 (anthrax); 3139-3140 (serological diagnosis of TB.); 3142 and 3152 (BCG); 3153-3154 (tuberculin test); 3162 (*S. dublin* infection); 3165 (standard antigen in pullorum disease); 3169-3171 (Strain 19); 3187 (sero-diagnosis of syphilis); 3191 (trypanosomiasis); 3203 (toxoplasmosis); 3206-3207 and 3211-3213 (F. & M. disease); 3216-3220 (rabies); 3221-3222 (serological tests with viruses); 3223 (influenza virus haemagglutination); 3229 (transmission of TB. by swine fever vaccine); 3243-3245 (Newcastle disease); 3254 (Q fever); 3281 (antibodies and strongylosis); 3414 (report, Malta); 3423 (U.N. report on rabies).

PARASITES IN RELATION TO DISEASE [ARTHROPODS]

KURTPINAR, H. (1950.) Spesifik bir Myiasis amili olan *Wohlfahrtia magnifica* (Schiner 1862) in, Türkiye ehli hayvanlar'ındaki rolü. [The flesh fly, *Wohlfahrtia magnifica*, in

a possibility that, even *in vivo*, an insufficiency of the protective mechanism mentioned could be brought about under pathological conditions which damage this barrier. Such a condition would in that case cause a pathological breaking down of blood corpuscles.

DOLL, E. R. & HULL, F. E. (1951.) **Observations on hemolytic icterus of newborn foals.**—*Cornell vet.* 41. 14-35. 3259

The authors discuss earlier work on haemolytic icterus in foals, with regard to haemolytic and haemagglutinating antibodies in serum and colostrum. Symptoms and lesions are described. Case histories of 20 mares over several breeding seasons are given with especial reference to agglutinating titres. Colostral titres are always higher than those of serum.

Vaccination with a formolized foetal liver tissue vaccine against equine virus abortion increases haemagglutinin titre for short periods; this may increase the severity of disease in foals born to sensitized mares and indicates a method of sensitization. Foals out of mares by stallions with compatible blood groups may develop significant haemagglutinin titres in their sera after ingestion of colostrum, but fail to develop the disease. Conversely, compatible parents have given foals which became affected after ingestion of colostrum. Probably the mare loses its haemagglutinins and fails to react to serological compatibility tests.

Titres in sensitized mares carrying incompatible foals may increase in the last months of gestation. Failure to do so does not prove compatibility and titres vary with each pregnancy. The authors consider severity of the disease to be related to titre. Few placentas were examined, but the foal's erythrocytes may pass this barrier in sufficient numbers to sensitize the dam.

The disease can be prevented by compatible matings, testing foal's blood and by withholding colostrum for 12 hours, using antibiotic prophylaxis against infection. Blood transfusion is necessary when the foal's red cell count is below 3,000,000. Alternate transfusion and exsanguination is recommended.—JOHN SEAMER.

Turkey.]—*Türk Veteriner Hekimleri Dernegi Dergisi.* 20. 349-355. [English summary.] 3260

The occurrence of these flies is reported in

Turkey in horses, cattle, sheep, goats and dogs. Preventive and curative control methods are discussed.—H. ERGÜN.

WATERHOUSE, D. F. & SCOTT, M. T. (1950.) **Insectary tests with insecticides to protect sheep against body strike.**—*Aust. J. agric. Res.* 1. 440-455. [Authors' summary copied verbatim.] 3261

Areas on the backs of sheep were sprayed with several insecticides and a comparison was made of the degree and length of protection thus provided against oviposition, and in one experiment against strike, by *Lucilia cuprina* when the sheep were exposed to a dense population of flies in an insectary. Indole plugs were tied into the fleece to provide conditions suitable for oviposition.

Under these conditions DDT gave better protection than other insecticides. In 2 per cent. concentration it gave excellent protection for 6-8 weeks; in 1 per cent. concentration the protective period was shorter, although valuable protection was still given. A noticeable feature of the DDT treatments was their long partial protection after some oviposition was permitted, an effect which was not as marked with other insecticides. Crude BHC [benzene hexachloride] preparations gave valuable protection when applied at 0.5 per cent. gamma isomer. Intermittent artificial rain, amounting to 17 inches, did not affect the protection afforded by 1.0 per cent. DDT or 0.5 per cent. BHC over a 64-day period. Chlordane gave some protection, but it was less effective than DDT, and chlorinated camphene did not give useful protection.

In vitro tests indicated that none of the insecticides was ovicidal. However, in larvicidal tests BHC was extremely toxic, the vapour killing larvae rapidly even when contact with the solid material was prevented. None of the other insecticides had a fumigating action, although in high concentrations they were often lethal on contact.

PIMENTEL, D., SCHWARDT, H. H. & NORTON, L. B. (1950.) **House fly control in dairy barns.**—*J. econ. Ent.* 43. 510-515. 3262

Treatments with an emulsion in 100 gal. water of 2 lb. lindane [contains benzene hexachloride]; 6, 12 or 24 lb. chlordane; 8 lb. toxaphene [a chlorinated camphene] or 3 lb. D.D.T. as wettable powder plus 6 lb. chlordane gave control of *Musca domestica* in dairy barns for four weeks or more. An emulsion of 16 lb. toxaphene in 100 gal. water used for spot treatment gave similar control. Emulsions of lindane and toxaphene were twice as effective as wettable powder forms. *M. domestica* in New

York had high resistance to D.D.T. A mixture of chlordane and D.D.T. was more effective than either constituent alone. Insignificant amounts of D.D.T. or lindane residues were found in milk except for the 48 hour and 1 week analyses of milk from barns treated with 12 lb. D.D.T. Elimination of flies caused no decrease in the bacterial count of milk.—C.M.S.

KING, W. V. (1950.) **DDT-resistant house flies and mosquitoes.**—*J. econ. Ent.* 43. 527-532. 3263

Chlordane emulsions at dosages of 100-200 mg. per square foot gave consistent results against D.D.T.-resistant *Musca domestica* in dairy barns, an average of 94% fly reduction being obtained in the fifth week. Dieldrin (a chlorinated naphthalene derivative), lindane and toxaphene were slightly less effective. Exposure of flies from barns to D.D.T.-treated plywood panels gave 70% mortality of female flies in 34.4 min. as compared with 3.2 min. for flies bred in the laboratory. Resistant flies from natural sources bred in the laboratory lose some resistance after a few generations. Increased resistance to D.D.T. was noted in *Aedes taeniorhynchus* and *A. sollicitans* in areas that had had intensive treatment, but lindane was effective in these areas. Benzene hexachloride is cheap and reasonably effective but rather toxic to man. *Anopheles pseudopunctipennis* and *Pediculus humanus corporis* have not yet acquired D.D.T. resistance.

—C.M.S.

AULT, C. N. (1950.) **El empleo del canfeno crorado (toxafeno) contra la garrapata *Boophilus microplus* Can. [Toxaphene for control of *Boophilus microplus*.]**—*Gac. Vet., B. Aires.* 12. 208-213. [Abst. from English summary.] 3264

Emulsified chlorinated camphene is an excellent dip against *Boophilus microplus*. At concentrations between 0.47 and 0.7%, cattle are completely cleared of tick within nine days after a single dipping and are protected against reinfestation for 12 days.

Adult and larval ticks present on the animals die within 48 hours, but not nymphs.

MUSGRAVE, A. (1947.) **Some ticks harmful to dogs in Australia.**—*Aust. Mus. Mag.* 9. 174-180. 3265

Two ticks are listed as occurring on dogs in Australia, *Ixodes holocyclus*, and *Rhipicephalus sanguineus*, the former being the more serious pest.

I. holocyclus is distributed along the coastal belt of Eastern Australia, and causes tick paralysis. *R. sanguineus* is found in Queens-

land and the North of New South Wales. It does not transmit any disease in Australia.

Details are given of life histories and of the diseases transmitted by these ticks.

—D. W. JOLLY.

MOORE, D. (1950.) Laboratory studies of combinations of piperonyl cyclonene, piperonyl butoxide, pyrethrins, and rotenone for the control of ticks on dogs.—*J. Parasit.* 36, 322-325. 3266

The results of several laboratory tests for the control of *Dermacentor variabilis* and *Rhipicephalus sanguineus* on dogs were summarized. Satisfactory control of both pests was obtained by dipping dogs in an emulsion containing 0.2% piperonyl butoxide and 0.01% pyrethrins, or by the application of one ounce per dog of a dust containing 1% piperonyl cyclonene, 0.1% pyrethrins and 0.5% rotenone. No ill effects were seen on any of the treated animals these findings being in agreement with previous reports on their safety.

See also absts. 3201 (tick-transmitted piroplasmosis in wild cat); 3337 (insecticides); 3412 (report, Australia); 3414 (report, Malta); 3418 (report, East Africa); 3420 (report, Zanzibar); 3425 (report, Madagascar); 3432 (index, medical and veterinary zoology).

PARASITES IN RELATION TO DISEASE [HELMINTHS]

HAY, J. (1950.) Motylca u cielat oseskow. [Distomatosis in unweaned calves.].—*Med. weteryn.* 6, 534. 3268

A note on the finding of liver flukes in calves killed at an abattoir.

—JOHN R. MITCHELL.

WRIGHT, W. H. (1950.) Bilharziasis as a public-health problem in the Pacific.—*Bull. World Hlth Org.* 2, 581-595. 3269

A general note on bilharziasis in the Pacific caused by *Schistosoma japonicum*. There is little current reference from year to year on infestation of animals with this worm. The following are the species of snails reported to serve as intermediate hosts: *Katayama cantoni* (China), *Katayama fausti* (China), *Katayama (Blanfordia) formosana* (Formosa), *Katayama lii* (China), *Katayama nosophora* (China), *Katayama (Blanfordia) nosophora* (Japan), *Katayama nosophora yoshidai* (Japan), *Oncomelania hupensis* (China), *Oncomelania schmackeri* (China), *Oncomelania tangi* (China), *Schistosomophora quadrasi* (Philippines), *Schistosomophora robertsoni* (China), *Schistosomophora slateri* (China). W. gives the following table showing the extent to which certain animals have been found to be infested; he states that the data were supplied by the Prefectural Health Department, Yamanashi

Weekly applications of either the emulsion or dust throughout the tick season would give complete control of both species of ticks. In addition kennels should be sprayed with an emulsion containing 1% piperonyl butoxide and 0.1% pyrethrins.—W. MOORE.

MONLUX, W. S. & TURK, R. D. (1951.) *Pneumonyssus caninum* in a dog.—*Cornell vet.* 41, 12-13. 3267

An account of a P.M. examination of a racoon hound which had died from a foreign body pneumonia. There was evidence of a sinusitis and rhinitis and 48 mites were found in the nasal passages and sinuses, corresponding to *Pneumonyssus caninum* previously reported in Michigan and New York State. No mites were found in the trachea, bronchi or lungs. It is suggested that the females are viviparous as no ova were found in smears. A photomicrograph of an adult female is shown. It is suggested that the mite may be widely distributed throughout the U.S.A.—R. S. MOIR.

Prefecture, Japan, of the incidence in that Prefecture in 1944-45.

Species	Number examined	Number positive	Percentage positive
Cattle	7,059	2,184	30.9
Goats	1,118	158	14.1
Dogs	353	176	49.9
Horses	967	0	0
"Rats" (probably including field-mice, <i>Microtus</i> spp.)	1,707	656	38.4
Moles	68	13	19.1
<i>Mustela</i> sp.*	10	9	90.0

*Probably *Mustela (lutreola) itatsi*.

In Japan reservoir hosts among the lower animals no doubt contribute to the extent of infestation. No mention is made in that table of swine. Wu [(1938) *Amer. J. Hyg.* 27, 290] stated that swine and dogs were found to be infested in China, and that it was believed that oxen and water buffalo were important links in the spread of the disease. On examination of animals, presumably from endemic areas in Chekiang, Anhwei and Kiangsu Provinces, he found that 12.6% of 39 oxen and 18.7% of 406 water buffalo were infested. In the Philippines, rats, dogs, cats, swine and young water buffalo were infested. Rats do not frequently pass ova,

but dogs, cats and swine no doubt contribute to some extent to the spread of the disease. Adult water buffaloes show some resistance to infestation and it is probable that they do not serve as reservoir hosts to any appreciable extent. The remainder of the article deals with general control measures, chiefly those concerned with human public health. It is estimated that nearly 33,000,000 people in China, 170,000 in Japan and about 250,000 in the Philippines are infested.

LIE-KIAU-JOE. (1951.) **Some human flukes from Indonesia.**—*Doc. Neerl. Ind. Morb. Trop.* 3. 105-116. [In English.] 3270

Of four flukes from human beings described in this article, one, *Haplorchis yokogawai*, a common parasite of dogs and cats was found three times in human beings by the author. There were no visceral lesions in the human beings who harboured them.

RAUSCH, R. & SCHILLER, E. L. (1951.) **Hydatid disease (Echinococcosis) in Alaska and the importance of rodent intermediate hosts.**—*Science*. 113. 57-58. 3271

Echinococcus granulosus is well established in Alaska in dogs and wild canines, the moose and caribou being intermediate hosts. On St. Lawrence Island, the tundra vole, *Microtus oeconomus inuitus* is the chief intermediate host. Skin tests reveal a high percentage of human reactors. Human beings are possibly infected by eating unwashed green food.

—G. M. URQUHART.

ENIGK, K. (1950.) **Zur Epidemiologie des Strongyloidesbefalles der Haus-und Nutztiere. [Epidemiology of Strongyloides infestation in domestic and fur bearing animals.]**—*Z. Tropenmed. Parasitol.* 2. 124-142. [Abst. from English summary.] 3272

Strongyloides of the horse, pig and coypu are distinct species (*S. westeri*, *S. ransomi*, *S. myopotami*). Cattle and sheep both carry *S. papillosus* which is probably common to all ruminants. Specificity of these four species was proved by cross-infection experiments; and, for the strongyloides of sheep and coypu, by cross-breeding experiments with free-living sexual forms.

S. myopotami differs morphologically from the other species mentioned above.

The development outside of the host was the same in all four species.

Strongyloides of domestic animals are readily transferred to rodents.

Carnivores cannot be infected with strongyloides of other domestic animals.

ALICATA, J. E. (1948-1950.) **Effects of roentgen radiation on *Trichinella spiralis*.**—*Univ. Rep. Hawaii Agric. Exp. Sta.* pp. 116-122. 3273

In order to determine the dependability of irradiation of pork for destruction of *Trichinella* larvae and also the dose required, slices of trichinosed pork and rat diaphragm from animals experimentally infected were subjected to a radiation dose of 10,000 r. at a rate of approximately 150 r. per min. This dose produced sterility in the adult worms which developed in experimental rats fed the treated meat. At dosages of 30,000 r. several growing larvae were found in rats killed 24 and 48 hours after infection, but none in those killed 72 hours after infection. Irradiation of 700,000 r. destroyed the power of the larvae to develop further. There was no recovery from irradiation. The morphological changes in the subsequent adult stage were: degeneration of the ovary of the worms, interference with embryogenesis, irregularity in the body wall and stunting of growth.—JAS. G. O'SULLIVAN.

RIEDEL, B. B. (1950.) **Sulfonamide therapy of trichinized white mice.**—*J. Parasit.* 36. 582-585. [Author's summary modified.] 3274

In tests on mice infected artificially with *Tr. spiralis* continuous feeding of 0.25% sulphaminoxaline did not effect a larval reduction. 2% of sulphamylamide in the food effected a larval reduction of 58% and 50%, while 1.5% of sulphamerazine was 52% and 59% effective. Combinations of sulphamylamide and sulphamerazine reduced the larval counts 67% and 80%.

Among the control mice infected with a lethal dose of larvae, 11% survived the 50-day experimental period. Sulphamylamide and sulphamerazine effected a survival of 62% and 71% respectively. The rate of mortality was reduced to 18% by a combination of sulphamylamide and sulphamerazine. The period of mortality was shortened among the sulphonamide groups of mice.

ACKERT, J. E. & LINGENZOWSKI, F. L. (1951.) **Chemical control of larvae of the dog hookworm *Ancylostoma caninum* (Ercolani).**—*Amer. J. trop. Med.* 31. 259-266. [Abst. from authors' summary.] 3275

Investigations were made on effects of acetic acid and some other chemical compounds on larvae of *Ancylostoma caninum* in faecal-soil cultures. All chemical compounds tested acted to some extent upon the larvae.

Applications of 5 or 10% concentrations of acetic acid to cat faecal-soil cultures for 24 hours after the larvae appeared at the surface of the culture killed over 98% of the larvae.

Application of 10% acetic acid to newly-made cat faecal-soil cultures inhibited hatching hookworm eggs for two days, and limited hookworm survival to 2.1 larvae per g. of faecal material during the first five days of treatment.

The following 10 chemical compounds had some lethal action: trichloroacetic acid, lactic acid, tartaric acid, citric acid, sodium acetate, calcium lactate, lead acetate, ferric acetate, manganese chloride and amyl acetate.

ROBERTS, F. H. S., O'SULLIVAN, P. J. & RIEK, R. F. (1951.) **The significance of faecal egg counts in the diagnosis of parasitic gastro-enteritis of cattle.**—*Aust. vet. J.* 27. 16-18. 3276

Single counts from individual animals facilitated diagnosis if sufficient animals were sampled and provided the disease was considered as affecting the herd rather than the individual. In small dairy herds faecal samples were usually collected from every calf, but in herds of beef cattle only from 20 to 25 animals.

When nutritional conditions were good cattle thrived while showing high egg counts, but when feed deteriorated, cattle with similar egg counts showed clinical helminthiasis.

Figures for egg counts and pathogenic infestations are given for a number of species.

—H. McL. GORDON.

EWER, T. K. & SINCLAIR, D. P. (1951.) **Internal parasitism in Canterbury sheep.**—*N.Z. J. Sci. Technol.* 32, Sect. A. pp. 35-48. 3277

The following conclusions were drawn from six years' observations on the internal parasites of sheep on an arable farm on the Canterbury Plains.

The species of greatest pathological importance were *Trichostrongylus* spp. while *Ostertagia* spp. were the most persistent. *Haemonchus contortus* was absent. Other pathogenic nematodes such as *Cooperia*, *Bunostomum* and *Chabertia* were found only in small numbers.

The level of infestation as judged by faecal worm egg counts was generally low. It was highest in lambs 4-6 months old, just prior to and after weaning. In only two years did it become high enough for a favourable body weight response to follow repeated drenching with phenothiazine. The critical level of infestation was shown by a mean faecal egg count of 2,000 eggs per g. (corrected for consistency, where counts on soft faeces were adjusted to a "pellet" basis).

When such an infestation in lambs was maintained for some time, drenching resulted in an increase in weight gain.

In normal seasons, when the summer months of November and December were dry,

the infestations in fattening lambs declined markedly as the autumn advanced.

In normal seasons re-infestation of young growing sheep on special feed crops such as rape, lupins, chou moellier or turnips apparently did not occur. In one season with high summer rainfall when clover undergrowth amongst the fattening feed was considerable, re-infestation of lambs kept for long on one area did occur.

Hoggets, overwintered on various specially grown and natural feeds, had low egg counts over the winter. When such sheep were poorly fed, to the extent that there was marked interference with growth rate in the late autumn, an increase in infestation did occur when weather conditions became suitable following autumn rains.

Ewes were found to harbour very few worms throughout the winter.

—L. K. WHITTEN.

SOUTHCOTT, W. H. (1951.) **The toxicity and anthelmintic efficiency of hexachlorethane in sheep.**—*Aust. vet. J.* 27. 18-21. 3278

Of 15 sheep each given 30 g. hexachlorethane in a bentonite suspension two died and in six others there were various degrees of intoxication. Of 15 sheep each given a 15 g. dose two had symptoms of intoxication, one being severely affected. Most of the affected animals responded to subcutaneous or intravenous injections of calcium boro-gluconate. Sheep drenched with carbon tetrachloride, 1 ml. or 2 ml., showed no ill-effects.

The fasciolicidal efficiency of the two drugs was similar, but a 30 g. dose of hexachlorethane was more effective than 1 ml. carbon tetrachloride against *Haemonchus contortus*. The sheep used in the trial were adult wethers in poor condition.—H. McL. GORDON.

KURTPINAR, H., ANTEPLIOGLU, H. & ERGÜN, H. (1950.) Phenothiazine ve cuprum sulfurcum'un koyun ve keçi nematode'larına karşı anthelmintic tesirleri üzerinde mukayeseli tecrübe. [Comparative experiments on effect of phenothiazine and copper sulphate for nematodes of sheep and goats.]—*Türk Veteriner Hekimleri Dernegi Dergisi*. 20. 255-264. [English summary.] 3279

Faecal examinations of a number of sheep and goats, made every three days using the Shorb method, revealed eggs of *Haemonchus*, *Ostertagia*, *Chabertia* and *Nematodirus*. Thirty animals selected, although running together, were arranged in three groups, the first being treated with phenothiazine in a single dose of 25 g., the second with copper sulphate in a single dose of 60 ml. of 2% solution and the

third group left untreated. For three weeks before and three weeks after treatment, egg counts (charted) were made daily on 1 g. of faeces. In the treated groups the egg count was rising before treatment, especially in the case of *Haemonchus* and *Ostertagia*. In the untreated group the egg count was increasing, but not to the same extent; the increase was sustained over the six weeks of the observation period. In the treated group phenothiazine was 99% effective against *Haemonchus*, 92% against *Ostertagia*, 41% against *Chabertia* and 10% against *Nematodirus*. Copper sulphate was 70%, 33%, 65% effective against the first three species respectively and was ineffective against *Nematodirus*. A small number of pregnant animals treated, lambed and kidded normally.—H. ANTEPLIOGLU.

PRIOUZEAU, M. (1950.) Le problème de la phénothiazine. [Experiences with phenothiazine in France.]—*Rec. Méd. vét.* 126. 329-346. 3280

A report from a practitioner in marshy country in the Vendée district of France where 30-40% of young horses and cattle were lost from intestinal parasitism. Between 1944-46 phenothiazine was much used in France and many complaints were made that it was ineffective and/or toxic. P. collected considerable information from French practitioners. He found that when phenothiazine was in great demand it had been supplied hurriedly in varied degrees of purity by some manufacturers; sometimes it was used unintelligently. The result was that many animals were treated with excessive doses of the impure drug. P. also discussed the use of phenothiazine for diseases not caused by worms susceptible to it.

From 1942, P. had treated 3,000 cattle and 800 horses with phenothiazine, and in one year his colleagues in the Vendée district treated 10,000 cattle and 1,500 horses, all without a single fatality. Through experience gained during the first two years, the dosage for cattle was fixed at 0.05-0.2 g. per kg. to be given on two successive mornings, the dose for horses being 0.05 g. per kg. given similarly. The need to fast horses for 12 hours before treatment and to allow only light nourishment between the two doses is emphasized; no special dietary régime is necessary for cattle. Used in this way phenothiazine has given excellent results against gastro-intestinal nematodes, nodular worms and coccidia in cattle, and intestinal strongylosis in horses. P. estimates that there are 110,000 cattle between eight months and two years of age in the Vendée dis-

trict and that one eighth of them were treated for strongylosis or coccidiosis in 1948. About 13,000 were probably treated without loss, although 30-40% of them would have died without the aid of this drug. The estimated saving in one year amounted to 200 million francs which is increased to 300 million francs if horses and sheep are considered. If such a calculation holds good for the whole of France, it is estimated that phenothiazine effected a saving of 25 milliard francs.—J. EDWARDS.

STEWART, D. F. (1951.) Circulating antibodies in rats resistant to *Nippostrongylus muris*. [Correspondence.]—*Nature, Lond.* 167. 151. 3281

Seven rats were given three subcutaneous doses each of 2,000 *Nippostrongylus* larvae at intervals of one week and given two weeks later 5,000 larvae each, eight control rats being given 5,000 larvae as an initial dose. The controls developed at least 1,000 worms and their sera were negative to complement-fixation tests while the others had evidently acquired some immunity, the number of worms being less and complement-fixation reactions being positive.—JAS. G. O'SULLIVAN.

DAVIS, C. L. & KEMPER, H. E. (1951.) The histopathologic diagnosis of filarial dermatitis in sheep.—*J. Amer. vet. med. Ass.* 118. 103-106. [Abst. from authors' summary.] 3282

These studies show the feasibility of diagnosing filarial dermatitis in sheep by histologic methods, although the maceration technique for the isolation of microfilariae is perhaps simpler and less time consuming. However, isolating motile microfilariae must be done on the day of necropsy because of the rapid deterioration of the parasites in postmortem specimens.

Microscopically, the lesion is essentially a chronic granulomatous process in which microfilariae can be readily demonstrated.

LAGRANGE, E. (1951.) Effect of ultrasonic vibrations on filariasis of the cotton rat (*Sigmodon hispidus*). [Correspondence.]—*Nature, Lond.* 167. 245. 3283

Mice infected with *Bilharzia mansoni* and cotton rats with *Litomosoides carinii* were subjected to ultrasonic vibration. No effect was observed in *Bilharzia*, but the number of larvae in the blood was reduced and larvae in the uterus of the worms were in a more advanced stage than that of the morula. Some of the rats developed diarrhoea and conjunctivitis and died.—GEORGE M. URQUHART.

SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS
[INCLUDING FOWL PARALYSIS]

PESONEN, S. (1950.) **Tumours resulting from parthenogenesis induced by plant hormones in albino rats.**—*Acta Endocrinol.* 5. 409-412. [In English. Abst. from author's summary.] 3284

The effects of certain chemical compounds, e.g. β -indolylacetic acid, phenylpropionic acid, etc., on the unfertilized ova of rats are described.

In about 15 days the ova developed into cystic connective tissue formations visible to the naked eye and growths consisting of reticular fibro-elastic connective tissue, fat cells, and granulosa cells, were also formed on the bursa ovarica and the ovary.

I. LAW, L. W. & MILLER, J. H. (1950.) **Observations on the effect of thymectomy on spontaneous leukemias in mice of the high-leukemic strains, RIL and C58.**—*J. nat. Cancer Inst.* 11. 253-262. 3285

II. LAW, L. W. & MILLER, J. H. (1950.) **The influence of thymectomy on the incidence of carcinogen-induced leukemia in strain dba mice.**—*Ibid.* [Abst. from authors' summaries.] 3286

I. Total thymectomy performed at 4 weeks of age reduced the incidence of spontaneous leukemia in strain RIL mice from 83.1 to 14.6%, and in strain C58 mice from 90.9% to 34.9%; the average age at death was also considerably higher. The leukemias were typically lymphoid in type. Splenectomy and homologous thymus transplants into C58 mice had no effect. The possible role of the thymus in the transformation from the normal cell to the leukemic cell is discussed.

II. Removal of the thymus at 4 weeks of age in strain dba mice reduced the incidence of lymphoid leukemia induced by methylcholanthrene from 69.7 to 22%. Removal of the spleen or transplantation of either one or two thymuses into intact dba mice at 4 weeks of age did not change the incidence of induced lymphoid leukemias from that in intact animals. The absence of thymic tissue had no effect on skin carcinomas and mammary tumours induced by methylcholanthrene. The role of the thymus in the conversion of lymphoid cells from normal to neoplastic was discussed.

REILLY, H. C. & STOCK, C. C. (1951.) **Studies on a tumor-retarding agent produced by**

Aspergillus fumigatus.—*Cancer Res.* 11. 366-369. [Authors' summary copied verbatim.] 3287

Preparations having the ability to inhibit the growth of Sarcoma 180 in mice have been extracted from the culture filtrate and mycelial pads of *Aspergillus fumigatus*. Chemical and electrophoretic data indicate that the active principle or principles may be basic proteins.

BRYAN, W. R., MAVER, M. E., MOLONEY, J. B., WOOD, M. T. & WHITE, C. L. (1950.) **Comparative stability of the agent of chicken tumor I in citrate and phosphate buffers at 37°C.**—*J. nat. Cancer Inst.* 11. 269-277. [Authors' summary copied verbatim.] 3288

The relative potencies of suspensions of the agent of chicken tumor I (Rous sarcoma) in citrate and in phosphate buffers were compared at different levels of pH after incubation for 3 hours at 37°C. Within the pH range studied, 4.5-7.0, the results were more reproducible in citrate than in phosphate buffers. An appendix on statistical analysis is included.

CATER, D. B. (1951.) **A histochemical and biochemical study of some effects produced by the Rous sarcoma upon the endocrine organs of cocks and hens.**—*J. Path. Bact.* 63. 269-284. [Abst. from author's summary.] 3289

Details were given of the changes occurring in the testes, ovaries, adrenals, preen gland and pituitary of 3-5 months old cocks and hens bearing Rous sarcoma. Biochemical analysis for ascorbic acid and histochemical methods for ascorbic acid, lipid, polysaccharide, and acid and alkaline phosphatase were used.

HUTT, F. B. (1951.) **The control of fowl paralysis.**—*Brit. vet. J.* 107. 28-35. 3290

The various methods which have been advocated for the control of fowl paralysis are reviewed, viz. complete isolation, partial isolation and control by breeding. The problem of egg transmission is briefly discussed. The author feels that the problem of infection is mainly one of exposure to the virus during the first few weeks of life rather than by dissemination of infection in the incubator. The evidence in support of this view is presented briefly.—D. LUKE.

NUTRITIONAL AND METABOLIC DISORDERS

I. SUTTON, T. S. & ESH, G. C. (1948.) **The nutrition of the newborn dairy calf. I. Changes in the tryptophan content of the blood plasma following birth and the ingestion of colostrum.**—*J. Dairy Sci.* 31. 183-187. 3291

II. WARNER, R. G. & SUTTON, T. S. (1948.) **The nutrition of the newborn dairy calf. III. The response to a photolyzed milk diet.**—*Ibid.* 976-985. [For part II, see *V.B.* 20. 375.] 3292

I. In an attempt to throw more light upon the role of tryptophane in the nutrition of the new-born dairy calf, the authors determined the concentrations of this amino-acid in the colostrum from ten cows, and in the blood plasma of 13 calves at birth, and on four subsequent occasions up to the 21st day after birth. Whole milk and blood plasma from 15 cows were similarly analysed for comparison.

Colostrum proved to be a rich source of tryptophane, first-milking colostrum containing about five times, and second-milking colostrum about three times as much as normal milk.

The average tryptophane content of calves' blood plasma was found to rise from 0.46 mg. per g. wet basis, at birth, to 0.96 mg. on the seventh day, and then to fall to 0.81 mg., by the 21st day.

The authors concluded that tryptophane probably represents a dietary precursor of nicotinic acid in the very young calf, since microbiological synthesis of that nutrient in the rumen is doubtful at so early an age.

II. Four new-born or very young male Guernsey calves were fed milk in which 96% of the riboflavin and appreciable quantities of vitamin A and carotene had been destroyed by radiation. The vitamin A was artificially restored to an adequate level, and one calf also received a daily amount of about 2.99 mg. of added riboflavin. This control developed uneventfully throughout the test, approached the Ragsdale standard of growth and excreted riboflavin in its urine to the extent of 0.38-0.64 mg. per day.

The three calves receiving no added riboflavin excreted amounts ranging from 0.01-0.06 mg. per day and had the usual symptoms of riboflavin deficiency, culminating in a peculiar collapse syndrome in one case.

When a daily dose of 2 mg. of riboflavin was added to the diet of one of these calves, the diarrhoea ceased, growth was resumed, new hair appeared and there was marked improvement in general appearance.

On P.M. examination, in the collapse victim these was mild oedema of the lungs, in another calf mild oedema of the cerebrum, and in a third a pebbled cornea, while the kidneys were found to be affected in two of the calves, and evidence of catarrhal enteritis was seen in all cases.

All four calves maintained normal blood levels of vitamin A and ascorbic acid.

On the basis of the limited evidence presented here, it appears that the minimum daily riboflavin requirement of the very young calf is below 75 μ g. per kg. body weight. Since the normal intake amounts to almost twice that figure, the authors consider that there is no danger of riboflavin deficiency occurring in the calf during the milk feeding period.

—G. P. MARSHALL.

HOGAN, A. G., REGAN, W. O. & HOUSE, W. B. (1950.) **Calcium phosphate deposits in guinea pigs and the phosphorus content of the 'diet.'**—*J. Nutrit.* 41. 203-213. [Authors' summary copied *verbatim*.] 3293

Approximately 90% of the guinea pigs that consumed a synthetic diet which contained 0.8% of calcium and 0.9% of phosphorus developed visible deposits of calcium phosphate. If the total amount of phosphorus was reduced to 0.5%, the incidence of the deposits was less than 10%. The Ca:P ratio may be as important as the absolute amounts.

When animals consumed the high-phosphorus diet they grew more slowly and the survival period was shortened. The soft tissues contained an abnormally high percentage of mineral constituents.

Under the experimental conditions described wrist soreness and wrist stiffness invariably preceded the appearance of visible calcium phosphate deposits.

HILL, R. M., HOLTKAMP, D. E., BUCHANAN, A. R. & RUTLEDGE, E. K. (1950.) **Manganese deficiency in rats with relation to ataxia and loss of equilibrium.**—*J. Nutrit.* 41. 359-371. [Authors' summary modified.] 3294

Rats have been raised through 4 generations on a diet otherwise adequate but supplying only 0.03 mg of manganese per day to an adult rat. After the first generation several animals of each generation developed symptoms of ataxia and disturbance in equilibrium which appeared earlier in each successive generation. Slight stimuli greatly exaggerated these symptoms. Serial sections of the temporal bones and brains of these animals failed to reveal any lesions that might be responsible for the symp-

toms. The presence of a chemical lesion in these areas resulting from the manganese deficiency is suggested.

SHOSHKES, M., GEYER, R. P., YEE, G. S. & STARE, F. J. (1950.) **The treatment of dicumarol-induced hypoprothrombinemia in dogs with emulsified vitamin K₁ administered intravenously.**—*J. Lab. clin. Med.* 36. 531-536. [Authors' summary slightly modified.] 3295

A stable emulsion of 5% vitamin K₁ in 5% dextrose was prepared by using a synthetic emulsifier and purified soybean phosphatide as emulsifiers. This emulsion withstood autoclaving without breaking. It was given intravenously to dogs and found to be a very effective anti-dicumarol agent as demonstrated by prevention of a dicumarol-induced hypoprothrombinemia and reversal of a markedly hypoprothrombinemic level of several days' duration in a matter of thirty to sixty minutes with return to normal values in two to six hours. No toxic effects from the emulsified vitamin K₁ per se were observed in the 50 and 60 mg. doses used. The vitamin K₁ emulsion exerted a moderate anti-dicumarol effect as long as ten days after it was injected.

KESLER, E. M. & KNOTT, C. B. (1951.) **B-vitamin studies in calves. I. The relation between age of calf and levels of thiamine, riboflavin and nicotinic acid found in the digestive tract.**—*J. Dairy Sci.* 34. 145-148. [Authors' summary slightly modified.] 3296

Chemical assays of thiamine, riboflavin and nicotinic acid were performed on the contents of the digestive tracts of calves slaughtered at various ages from 2 to 14 weeks. Levels of all three vitamins were generally higher in all parts of the tract than in the feed the animals had received. Riboflavin and niacin were found in greater concentrations in the small intestine than in other regions of the tract. Thiamine was found in highest amounts in the rumen and omasum. Under the conditions of this experiment, no relationship could be noted between the age of the calf and levels of B-vitamins in the digestive tract.

DANIELYAN, S. G. (1950.) **[Pellagra (vitamin B deficiency) in pigs.]**—*Veterinariya, Moscow*. 27. No. 1. p. 49. 3297

D. reported cases of illness in pigs 3-8 months old, the symptoms being diarrhoea, deficient appetite, thirst and the appearance of skin lesions, loss in weight ending fatally. Cure was effected by adding 300 g. yeast daily for ten days to their feed in the early stages of the illness.—F.A.A.

PANTRIDGE, J. F. (1948.) **Cardiac lesions in thiamin deficiency [in pigs].**—*Brit. Heart J.* 10. 252-62. 3298

Four pigs, five weeks old, kept on a vitamin-free basic diet supplemented by all known synthetic vitamins except thiamine and subjected to frequent electrocardiographic examinations, developed in 40-77 days disturbances of auriculo-ventricular conduction not affected by atropine. One pig died of complete heart block, but the death of the others was prevented by a single intramuscular injection of 2.5 mg. thiamine hydrochloride, and for some time following treatment normal cardiograms were recorded. With continued thiamine deficiency, one of the survivors developed a partial heart block and the other two, marked cardiac abnormalities.

P.M. examination revealed excess pericardial fluid and dilatation of the right auricle and ventricle. Histological lesions in the auricles, auricular appendages and auricular septa of all four animals, consisted of necrosis and fibrosis of the myocardium, and degenerative changes in the cells of the A-V conducting system. In the ventricles lesions were confined to the Purkinje system.

Two control pigs kept on a similar diet with the addition of 0.51 mg. thiamine hydrochloride per kg. body weight daily remained healthy, and developed no abnormality either histologically or on cardiographic examination.

These findings are discussed in relation to previous work and P. postulates that initially the heart block is due to a reversible biochemical disturbance, which is capable of progression to an irreversible morphological change if acute deficiency is of sufficient duration.

→J. T. DONE.

BURROUGHS, W., EDGINGTON, B. H., ROBISON, W. L. & BETHKE, R. M. (1950.) **Niacin deficiency and enteritis in growing pigs.**—*J. Nutrit.* 41. 51-62. [Authors' summary copied verbatim.] 3299

Weanling pigs were individually fed rations low in niacin during three feeding experiments. Niacin deficiency was produced with two rations whose major ingredients were corn, starch, casein and either cowpeas or soybean oil meal. The niacin content of these rations was less than 15 µg per gram. The principal deficiency symptoms noted in the pigs were poor appetite, slow growth, roughened haircoat, diarrhoea, anemia, and disturbances in the large bowel.

Pigs receiving similar rations to which were added 60 mg of niacin daily, grew and de-

veloped normally. Deficient pigs also responded to niacin feeding during recovery trials.

The diarrhea produced was not alleviated by sulfathalidine or sulfasuxidine. It at no time produced body temperature elevations similar to those encountered in diarrheas caused by infectious agents.

WIESE, A. C., LEHRER, W. P., JR., MOORE, P. R., PAHNISH, O. F. & HARTWELL, W. V. (1951.) **Pantothenic acid deficiency in baby pigs.**—*J. Anim. Sci.* 10. 80-87. [Authors' summary copied *verbatim*.] 3300

Pantothenic acid deficiency in the young pigs is characterized by poor growth, loss of appetite, scours, lachrymation, dermatitis, coughing, loss of the sucking reflex, a dark brown exudate around the eyes, spastic gait, "goose-stepping", alopecia, and low urinary excretion of pantothenic acid.

The daily feeding of one mg. of calcium pantothenate resulted in an improvement of appetite and growth and cessation of scours. There was no great improvement of the other symptoms. This was probably due to the severe depletion of the animals since they were unable to respond completely to the administration of calcium pantothenate. However, the daily supplementation of 10 to 20 mg. of calcium pantothenate resulted in complete recovery and great improvement of appetite and growth.

CARTWRIGHT, G. E., PALMER, J. G., TATTING, B., ASHENBRUCKER, H. & WINTROBE, M. M. (1950.) **Experimental production of nutritional macrocytic anemia in swine. III. Further studies on pteroylglutamic acid deficiency.**—*J. Lab. clin. Med.* 36. 675-693. [Authors' summary modified.] 3301

Further studies on the macrocytic anemia of pteroylglutamic acid deficient swine are presented.

Under the conditions of these experiments a slight and definitely suboptimal hemopoietic response was observed following the administration of crystalline vitamin B₁₂, proteolyzed liver, Marmite, crude desoxyribonucleic acid, and crude ribonucleic acid. The administration of thymine in addition to crystalline vitamin B₁₂ did not appreciably augment the activity of the vitamin. Histidine failed to elicit consistently an appreciable hemopoietic response.

No relationship was found between pteroylglutamic acid and ascorbic acid or tyrosine metabolism. The administration of ascorbic acid did not elicit a hematologic or growth response; whole blood and plasma ascorbic acid

levels were not reduced in the deficient pigs; "tyrosyl" excretion in the urine was not increased; the administration of either ascorbic acid or pteroylglutamic acid failed to reduce the "tyrosyl" excretion below normal; and ascorbic acid failed to decrease the "tyrosyluria" which followed the administration of large doses of tyrosine. However, the administration of large doses of tyrosine was consistently followed by a slight hemopoietic response.

The experimental macrocytic anemia is accompanied by a decrease in free erythrocyte protoporphyrin, an increase in plasma iron, and a normal level of plasma copper.

Under the conditions of these experiments pteroylglutamic acid deficient pigs excreted 30 to 40 µg. of "vitamin B₁₂" in the feces daily. Following the administration of pteroylglutamic acid there was a reduction in the amount excreted in the feces and an increase in the amount excreted in the urine.

The administration of large doses of 4-amino-pteroylglutamic acid resulted in the rapid development of normocytic anemia, leucopenia, and changes in the nucleated red cells in the marrow identical with those following the more prolonged administration of the crude methyl antagonist.

JOHNSON, B. C., NEUMANN, A. L., NESHEIM, R. O., JAMES, M. F., KRIDER, J. L., DANA, A. S. & THIERSCH, J. B. (1950.) **The interrelationship of vitamin B₁₂ and folic acid in the baby pig.**—*J. Lab. clin. Med.* 36. 537-546. [Authors' summary slightly modified.] 3302

Baby pigs fed a vitamin B₁₂-deficient diet for three weeks were co-fed 3 g. of "x-methyl" folic acid per kg. of dry matter of the diet for the next two weeks which resulted in a marked decrease in growth rate and in the death of five out of twelve pigs. At the end of the three-week depletion period, the bone marrow showed a rise in nucleated red cells. Following the two-week feeding of the folic acid antagonist the bone marrow became depleted, especially in erythroid elements, and numerous basophilic normoblasts and erythroblasts appeared. The blood and bone marrow symptoms of this combined vitamin B₁₂-folic acid deficiency were cured by either crystalline vitamin B₁₂ or by folic acid therapy. Vitamin B₁₂ therapy resulted in optimum growth, while folic acid treatment gave only temporary and suboptimal growth stimulation.

In a second experiment baby pigs were fed a lower protein (20% as compared with 30% in the previous experiment) vitamin B₁₂-folic acid low diet plus sulfathalidine in an attempt

to produce the double deficiency without the use of a folic acid antagonist. In this experiment a marked reticulocyte response occurred on vitamin B₁₂ therapy followed by a second marked response to folic acid administration. The vitamin B₁₂-deficient pigs were found to have enlarged thyroids, kidneys, livers, and tongues. From these two experiments it appears that the pig required both vitamin B₁₂ and folic acid and that both are involved in hematopoiesis. In addition, vitamin B₁₂ is required for normal growth.

LEPKOVSKY, S., BORSON, H. J., BOUTHLET, R., PENCHARZ, R., SINGMAN, D., DIMICK, M. K. & ROBBINS, R. (1951.) **Reproduction in vitamin B₁₂-deficient rats with emphasis upon intrauterine injury.**—*Amer. J. Physiol.* 165. 79-86. [Authors' summary copied *verbatim*.] 3303

Vitamin B₁₂ deficient female rats have progressively severe reproductive abnormalities with successive litters. Third litter young that are born are so debilitated as a result of injury incurred *in utero* that they do not survive even when nursed by normal females on stock diet. Administration of vitamin B₁₂ parenterally at birth enables many, but by no means all, of these (third litter) rats to survive. Rats that are weaned on vitamin B₁₂ deficient diets undergo a period of high mortality 2 to 3 weeks after weaning. Lactation of the vitamin B₁₂ deficient mother is impaired, but little compared to the intra-uterine injury suffered by the young.

CUTHBERTSON, W. F. J. (1950.) **Vitamin B₁₂.**—*S. Afr. med. J.* 24. 1033-1036. [Author's conclusion copied *verbatim*.] 3304

It may be said that B₁₂ produces complete control of pernicious anaemia and is of importance in a number of other human macrocytic anaemias.

The vitamin is essential for pigs and chickens and may be of economic importance in allowing these animals to grow satisfactorily on readily available vegetable rations without the use of expensive animal protein supplements.

B₁₂ has been shown to have beneficial effects in liver disorders produced in experimental animals by dietary methods. It is thus possible that it may have applications in the prevention or control of similar conditions in man.

HOLMES, J. R. (1950.) **Observations on the incidence of subclinical ketosis in a dairy herd.**—*Brit. vet. J.* 106. 365-376. 3305

The appearance of ketone bodies in milk and urine, without clinical symptoms, was ap-

parently associated with diminished food intake in high yielding cows and with the period of maximum 'metabolic stress' after parturition; heifers appeared to be less affected than older cows. Spring grass was effective in clearing up the condition. The feeding of mineral supplements appeared to be ineffective.

—R. MARSHALL.

CARLSTROM, B. (1950.) **Deficiency diseases, particularly acetonaemia in cattle.**—*Vet. Rec.* 62. 717-722. Discussion pp. 722-728. 3306

The theory is advanced that in high yielding cows, the production of plentiful prolactin by the anterior pituitary gland results in reduced production, also by the anterior pituitary, of adrenocorticotrophic hormone. The stimulation of function of the adrenal cortex which this hormone causes is thus also reduced; carbohydrate metabolism is therefore disturbed and ketosis results.

An inability to deal with overproduction of volatile fatty acids in the rumen, and consequent production of acetone bodies, may be of endocrine origin.—R. MARSHALL.

COOP, I. E. (1949.) **The effect of starvation, and of feeding after starvation, on metabolic activity in the rumen.**—*N.Z. J. Sci. Tech.* 31. Sect. A. 1-12. [Author's summary modified.] 3307

A sheep with a rumen fistula was starved for periods of three to four days and then fed. Changes in the pH and volatile acid content of the rumen were measured. A measure of microfloral activity was obtained by determining, *in vitro*, the rate at which ruminal samples ferment glucose and lolaustralin. It was shown that during starvation microfloral activity rapidly decreases to a low level. When the sheep is fed after starvation, the recovery to normal ruminal activity takes from 12-24 hours. The trends in pH and volatile acid content of the rumen support these observations.

UNDERWOOD, E. J. & SHIER, F. L. (1951.) **The permanence of the oestrogenic effects of subterranean clover grazing on the ewe.**—*Aust. vet. J.* 27. 63-67. [Abst. from authors' summary.] 3308

The authors observed a high degree of permanence of the oestrogenic effects of subterranean clover grazing on the ewe, including the uterine lesions (cystic endometrium). There was no significant or measurable improvement in the breeding performance of ewes of various ages transferred for one, two or three successive seasons to grazing free from subterranean clover.

Ewes may become slightly affected at an

early age (4-5 months), but the effects become progressively more severe with each year of grazing on subterranean clover dominant pasture. The resulting infertility is due, not to a failure of oestrus, but to a failure to conceive and infertility and dystocia are different degrees of manifestations of the same disturbance of the reproductive system.

SCOTT, M. L. (1950.) **Studies on the enlarged hock disorder (perosis) in turkeys.**—*J. Nutrit.* 40. 611-624. [Author's summary copied *verbatim*.] 3309

The results presented in this report further

See also absts. 3234 (vitamin B₁₂); 3316 (oedema disease of pigs); 3401 (hand-feeding of sheep during drought); 3412 (report, Australia); 3415 (report, Leeward Islands); 3418 (report, East Africa); 3426 (report, U.S.A.); 3436 (book, biochemistry of B vitamins).

DISEASES, GENERAL

FLÜCKIGER, G. (1948.) **Organizzazione internazionale della lotta contro le epizootie. [International organisations for control of epizootics.]**—*Zooprofilassi*. 3. No. 6. pp. 1-9. 3310

An account of the objects and work of the Office International des Epizooties. In 1948 an agreement was made between the Office and the Food and Agriculture Organisation by which the former was to deal with infectious and parasitic diseases and the latter with malnutrition, teaching of new methods and provision of new products for the veterinary profession. It was also decided to found rinderpest research institutes in Africa and in Saigon for the Far East. During the second World War an office for the Pacific area was set up in Sydney; the Office International was considering the future of this Sydney office and also the setting up of other offices in various countries.

—K. SLAVIN.

PINTO, A. A. (1950.) **Afecções do recém-nascido. [Diseases of new-born animals.]**—*Rev. Mil. Rem. Vet.* 10. 25-43. 3311
A review.—R. MACGREGOR.

ISAKSSON, A. (1951.) **Wall's liver biopsy for horses.**—*J. Amer. vet. Med. Ass.* 118. 320-322. [Abst. from author's summary.] 3312

The author describes the instruments and technique for liver biopsy in the horse. The operation has been carried out officially for the last 15 years in Sweden.

ALTAN, Y. & EŞİN, İ. (1950.) **Boluda görülen kan işeme hastalığı hakkında rapor. [Chronic haematuria in cattle in Bolu (Turkey).]**—*Türk Veteriner Hekimleri Dernegi Dergisi*. 20. 217-222. 3313

emphasize the primary importance of choline in the prevention of perosis in turkeys. In no instance was perosis completely prevented as long as the choline level in the diet was below 850 mg per pound.

When animal protein was omitted from the diet, choline was ineffective in completely preventing perosis unless the diet also contained betaine or a relatively high level of glycine and vitamin B₁₂.

Both sarcosine and creatine were as active in the prevention of perosis as betaine, and more active than glycine, under similar conditions. The possible interconversion of these substances during metabolism is discussed.

The occurrence of this disease is noted in the mountainous districts of Bolu province.
—S. ALPAR.

ROBINSON, V. B. (1951.) **Nasal granuloma—A report of two cases in cattle.**—*Amer. J. vet. Res.* 12. 85-89. [Abst. from author's summary.] 3314

Two cases of nasal granuloma in cattle are reported, apparently the third and fourth reported incidences of this disease in the U.S.A. The tissue reactions indicate that the bodies seen in the lesions are the cause of the disease. The limited evidence available indicates that the causative organism is probably a fungus. The morphology does not appear incompatible with that of the genus *Rhinosporidium*, although it does not seem identical to *Rhinosporidium seeberi*. There is nothing to indicate that these 2 cases were caused by *Schistosoma*.

BLENDINGER, W. (1950.) **Die Fremdkörperoperation am Rind mit Wechselschnitt. [Operation for the removal of a foreign body from the ruminant stomach.]**—*Tierärztl. Umsch.* 5. 452-453. 3315

B. described an improved technique of rumenotomy in which the incisions through skin, muscle and peritoneum are done alternately horizontally and vertically, the cutaneous one being horizontal. Two new instruments are described: skin retractors which hook on to the intact skin and are self retaining, and rumen forceps which are also self retaining in the same way. By the use of these instruments the operator does not require any assistance.

B. uses a solution of diaminodiphenyl sulphone for antibacterial treatment of the wound edges when suturing.—J. EDWARDS.

IDE, M. & SIERENS, G. (1951.) Slingerziekte bij varkens. [Oedema disease of pigs.]—*Vlaam. Diergeneesk. Tijdschr.* 20. 100-103. [English, French and German summaries.] 3316

A description of the so-called "oedema disease" in piglets in Belgium; dealing with symptoms, P.M. findings, aetiology (which is believed to be nutritional), and treatment.

—J. DEOM.

LACROUTS, M. (1946.) De la maladie de la peur (fright disease) chez le chien. [Canine hysteria.]—*Thesis. Alfort.* pp. 68. 3317

No original observations were reported in this thesis, which reviewed and discussed some of the literature on aetiology, pathology, symptoms and treatment of canine hysteria

—A. G. SINGLETON.

CHRISTOPH, H. J. (1950.) Beitrag zur Statistik und Therapie der Erkrankungen des Auges und der Augenhilfsorgane des Hundes, unter besonderer Berücksichtigung der Konjunktivitis. [Incidence and therapy of eye diseases in dogs with special reference to conjunctivitis.]—*Mh. Vet-med.* 6. 53-57. 3318

This is a statistical report from the outpatient clinic at Leipzig veterinary school. During the years 1946-49, 44,700 dogs were treated, 2,550 for diseases of the eyes. Conjunctivitis accounted for 78% of these cases.

—J. EDWARDS.

PLATT, H. (1951.) Canine chronic nephritis. I. Observations on the pathology of the kidney.—*J. comp. Path.* 61. 140-149. [Abst. from author's summary.] 3319

The morbid anatomy and histopathology of eight cases of acute nephritis and 25 cases of chronic nephritis in dogs were described.

JUHN, M. (1950.) Abnormal feather germ organization with asymmetrical expression in a Rhode Island Red fowl.—*J. Morphol.* 86. 47-57. [Author's summary copied verbatim.] 3320

A Rhode Island Red hen is described which exhibited an abnormal shrunken condition of the skin and very scanty plumage on the right side of the body. Normal feather eruption was obviously difficult due to the constriction of the mouth of the feather follicles. Feather germs were frequently retained within the lumen and feathers when formed often developed as spirals or tight curls. Barbs were fused and abnormally long. The after-feather sometimes almost equaled the dwarfed main vane in size. Simple mechanical obstruction of axial growth here apparently altered the growth properties of the feather germ, resulting in an earlier fission of the ventral triangle to produce the hyporhachis and in a prolonged developmental period of individual barbs.

Pigmentation of feet, shanks and the small claw of the second digit of the wing was asymmetric, being typically Rhode Island Red on the right and yellow on the left. Pigmentation of the right eyelid was also much heavier. Iris and plumage colour did not differ and paired internal organs showed no asymmetry.

History of the bird recorded it as deficient in the down, and as relatively slow in feathering even on the practically normal left side of the body.

DIBLE, J. H. (1951.) Degeneration, necrosis, and fibrosis in the liver.—*Brit. med. J.* April 21st. 833-841. 3321

Although work with the rat seemed to indicate that fatty infiltration preceded liver necrosis and ultimately fibrosis, D. found little evidence for this in the light of human pathological experience. He therefore suggested that any classification of human cirrhoses according to such a view of their aetiology was untenable. The two main causes of portal cirrhosis are a previous acute or subacute hepatitis and a cryptogenic progressive disease, which may or may not be associated with diet and does not appear to be preceded by fatty infiltration or extensive acute necrosis.

—JAMES H. HALE.

See also absts. 3412 (report, Australia); 3415 (report, Leeward Islands); 3428 (report, U.S.A.); 3433 (book, pig diseases); 3434 (book, internal diseases).

POISONS AND POISONING

BROOM, W. A., GURD, M. R. & HARMER, G. L. M. (1951.) Effect of diet on toxicity to rabbits of the toxic factor from 'agenized' flour [Correspondence.]—*Nature, Lond.* 167. 772-773. 3322

Moran *et al.* found that the toxic factor [see *V.B.* 20. 306] given *per os* in doses of 5

mg. of the *dl*-compound or 2 mg. of the *l*-compound caused convulsions in 90% of rabbits, weighing 600-800 g., fed a diet with a high flour (85% extraction, unfortified) content. The authors repeated the tests, administering doses of up to 20 mg. of the *dl*-compound or 10 mg. of the *l*-compound to rabbits fed a diet with

a liberal supply of green food and no convulsive effect was observed.

Fresh green food appears to be rich in a dietary factor which prevents or reduces the convulsive effect of the toxic factor in rabbits. There are indications that this may be glutamine.—E.M.J.

KRANEVELD, F. C. & DJAENOEDIN, R. (1950.) Enige oriënterende proeven over mimosine als haaruitval-verwekkend agens bij paarden. [*Mimosine, a plant poison from *Leucaena glauca* causing loss of hair in horses.—*Hemera Zoa.* 57. 623-639. [English, French and German summaries, abst. from English summary.]* 3323

The authors record the effect of feeding horses (a) foliage and dried seeds of *Leucaena glauca* (b) mimosine a substance found in the plant and especially in the seeds. In two horses fed with dry seeds there was a tendency for the hair both on the body and the long hair of the mane and tail to fall out. Experiments with dried foliage gave similar results.

Kostermans extracted a product consisting of 80-90% mimosine the remainder being sugar and chlorophyll. A horse given 200 g. in four days became seriously ill with stomatitis, haemorrhagic enteritis and proctitis, oedema of hind legs and genital organs and acute laminitis; there was also loss of hair of mane and tail. A second test in which a horse was given 100 g. in four days confirmed the toxic properties of the mimosine compound. A third test with small doses (65 g. in 47 days) had no effect on a horse and a fourth horse fed 10 g. daily with interruptions of 20, 15 and 18 days respectively lost part of the hair of mane and tail. The same substances tested on rabbits and g. pigs had no ill effect.

LEE, J. G. (1950.) Experimental lathyrism produced by feeding Singletary pea (*Lathyrus pusillus*) seed.—*J. Nutrit.* 40. 587-594. [Author's summary slightly modified.] 3324

The ingestion of diets containing 70% *Lathyrus pusillus* seed meal leads to the development of the symptoms usually associated with lathyrism. A deficiency within the ration is not the cause. The peas contain some toxic substance. The toxicity is not due to the presence of an enzyme or toxic inorganic material. The feeding of α -tocopherol in large doses confers some protection against the paralysis. This is not due to an anti-oxidant effect within the digestive tract. Divicine is not the material present which is responsible

for the skeletal and muscular changes. [The tests were made on rats and chicks.]

PARKER, W. H. (1951.) Foxglove (*Digitalis purpurea*) poisoning in turkeys.—*Vet. Rec.* 63. 416. [Author's summary copied verbatim.] 3325

Sixty-eight turkeys were affected with what appeared to be foxglove poisoning. The chief symptoms were drowsiness, inappetance and stasis of the crop. Ten died. In the remainder recovery quickly followed surgical removal of the crop contents.

GÖREN, S. (1949.) Yılanlar ve Yılan serumu. [*Snakes and antivenins.*]—*Türk İjiyen ve Tcrübi Biyoloji Dergisi.* 9. 87-101. [French summary.] 3326

Poisonous snakes of Turkey belong to five species of the genus *Vipera*, namely *V. ammodytes*, *V. xanthina*, *V. berus berus*, *V. lebetina* and *V. aspis lebetina*. The first two are common, the others are rare. As regards distribution, *V. ammodytes* is mostly found in Thrace and the Istanbul area, while *V. xanthina* is the only viper of Anatolia. The frequency of snakebite in man and animals is unknown. Previously, antivenin was imported, but it is now being prepared in Ankara.—S. ÖNUK.

OLAFSON, P. & MCENTEE, K. (1951.) The experimental production of hyperkeratosis (X-disease) by feeding a processed concentrate.—*Cornell Vet.* 41. 107-109. 3327

A cattle food described as "a processed concentrate" was suspected to have caused hyperkeratosis. A supply of this was obtained and fed experimentally to calves. Six calves weighing from 200-400 lb. were given "a quart or less" of this concentrate each day and all developed typical symptoms of the disease. Lachrymation developed from 6-20 days after the first feeding. Death occurred 37 and 60 days after feeding started in two of the calves.

Eleven pounds of the suspected food pumped into the abomasum of a heifer with a rumen fistula caused death in 72 days.

A heifer weighing 400 lb. which had recovered from spontaneous hyperkeratosis was given 38 lb. of the suspected concentrate over a period of 57 days and died 74 days after the initial feeding. A cow and a heifer given one fifth to two thirds of a pound per day were alive after four and a half months of this feeding but the skin was becoming progressively thicker. The sucking calf of the cow did well for two months but began to lose weight in the third month and died at the end of the fourth month. It was concluded that the toxic substance was being eliminated in the cow's milk.

Control calves fed and housed with the experimental animals did not develop any signs of hyperkeratosis.

G. pigs died in about three weeks when fed on this concentrate. Rabbits, rats and mice were alive after three months' feeding.

Two lambs weighing about 50 lb. each, ate 54 lb. of the concentrate over a period of 91 days. One refused to eat after the 91st

See also *absts.* 3328 (toxicity of penicillin to g. pigs); 3412 (report, Australia).

PHARMACOLOGY AND GENERAL THERAPEUTICS

(For treatment of specific infections see under the appropriate disease)

STUART, P. & SLAVIN, G. (1951.) **Toxicity of penicillin to guinea pigs.**—*Nature, Lond.* 167. 319-320. 3328

A daily intramuscular dose of 20,000 units of amorphous, coloured penicillin in aqueous solution caused death in 13 out of 20 g. pigs in 3-10 days. Pure crystalline penicillin under the same conditions killed 15 out of 20. No deaths occurred when the penicillin had been inactivated with penicillinase. Penicillin blood levels one hour after intramuscular injection of 20,000 units were not affected by a previous course of penicillin which the animals had survived. After three hours the blood level in previously treated animals and in those not previously treated was less than 0.15 unit, and in most cases zero. These levels were unexpectedly low. Blood from g. pigs injected four hours previously with penicillin was not toxic for normal g. pigs in subcutaneous doses of 5-10 ml.—N. DEAN.

HAWKINS, J. E., JR., BOXER, G. E. & JELINEK, V. C. (1950.) **Concentration of streptomycin in brain and other tissues of cats after acute and chronic intoxication.**—*Proc. Soc. exp. Biol., N.Y.* 75. 759-761. [Authors' summary copied *verbatim*.] 3329

Streptomycin was found in the brain, lungs and liver of cats for as long as 3 days after a single injection of 400 mg. per kg. At this time the drug had virtually disappeared from the blood and CSF. The concentration in the brain was small compared with that in the other organs. In cats showing typical chronic intoxication during treatment with streptomycin in daily doses of 100 mg. per kg, no accumulation of the drug was found in the serum, CSF or brain 24 hours after last dose. Significant concentrations of the drug were present in other tissues, especially in the kidney. It is concluded that the chronic neurotoxic action of streptomycin cannot be attributed to accumulation of the drug in the brain as a whole or in the brain stem.

day and died on the 101st day. The other ate a further 24 lb. during the next 54 days and then refused to eat and was killed ten days later.

No information is given as to the nature of the suspected foodstuff nor the method by which it was processed. [From the text of the article, the six calves were presumably given "a quart or less" of this concentrate between them daily.]—M.C.

REKERS, P. E. & MARTI, N. (1951.) **The effect of aureomycin and the flavonoid rutin on the splenectomized rat.**—*Amer. J. med. Sci.* 221. 191-194. [Authors' summary copied *verbatim*.] 3330

A profound anemia and conspicuous leukocytosis follow splenectomy in the stock Slonaker-Addis albino rat, with the appearance of previously absent *Bartonella muris* bodies in the untreated rats. The administration of aureomycin or rutin before and rutin after splenectomy prevents or reduces these hematological alterations.

Whereas each of these drugs may act solely as an antibiotic agent in this phenomenon, the question of other action or actions is raised, but not supported by data incorporated in this report.

BASS, A. D., YNTEMA, C. L., HAMMOND, W. S. & FRAZER, M. L. (1951.) **Studies on the mechanism by which sulfadiazine affects the survival of the mammalian embryo.**—*J. Pharmacol.* 101. 362-367. [Authors' summary slightly modified.] 3331

It has been shown that SAD [sulphadiazine] and SAM [sulphamerazine] reduce the percentage of deliveries when administered to pregnant mice. This effect is obtained when these agents are administered prior to the eighth day of gestation. This effect of SAD on the pregnancy is not counteracted by nicotinamide or folic acid. Evidence is presented which suggests that high blood concentrations of SAD interfere in some way with the production or utilization of either the female sex hormones or the gonadotrophic hormones. Lithium chloride and nitrogen mustard [methyl-bis-β-chloroethylamine] also reduce the percentage of deliveries.

GUBNER, R. (1951.) **Therapeutic suppression of tissue reactivity. I. Comparison of the effects of cortisone and aminopterin.**—*Amer.*

J. med. Sci. 221. 169-175. [Author's summary copied *verbatim*.] 3332

Attention is drawn to the similarity in action of cortisone and the folic acid antagonist aminopterin. Although the locus of their biochemical effects does not appear to be the same, both are anti-anabolic and inhibit tissue regeneration. Observations are reported indicating the inhibitory effect of aminopterin on various tissue elements. Amelioration of psoriasis, and of experimental and clinical arthritis, reflects suppression of epithelial and mesenchymal derivatives respectively.

Clinical disorders in which reparative and proliferative host responses are inimical to the body's welfare may be nosologically grouped as diseases of tissue reactivity. In such disorders suppression of tissue reactivity, which itself constitutes the disease process, becomes a therapeutic necessity. The therapeutic rationale of agents that suppress tissue reactivity such as cortisone and anti-folic compounds, and of other compounds which may more selectively affect mesenchyme, is discussed.

KLIGMAN, A. M., BALDRIDGE, G. D., REBELL, G. & PILLSBURY, D. M. (1951.) **The effect of cortisone on the pathologic responses of guinea pigs infected cutaneously with fungi, viruses, and bacteria.**—*J. Lab. clin. Med.* 37. 615-620. [Authors' summary copied *verbatim*.] 3333

Guinea pigs were experimentally infected with *Trichophyton mentagrophytes*, vaccinia virus, and *Staphylococcus aureus*. The course of these infections was adversely influenced by the administration of cortisone. The sensitivity to trichophytin and to killed vaccinia virus in animals rendered allergic by infection was not diminished by cortisone.

PIRANI, C. L., STEPTO, R. C. & SUTHERLAND, K. (1951.) **Desoxycorticosterone acetate and wound healing.**—*J. exp. Med.* 93. 217-228. [Abst. from authors' summary.] 3334

The effect of desoxycorticosterone acetate (DCA) on the granulation tissue of healing and healed linear laparotomy wounds was studied in young adult male guinea pigs maintained on a complete diet and on a known intake of ascorbic acid.

DCA induces the production of an excessive amount of granulation tissue, accompanied by a slight to moderate lag in the maturation process of both cellular and intercellular elements. These changes were observed when DCA administration was begun 5 days prior to operation, but were less obvious or absent

if DCA was injected, beginning on the 5th or 10th postoperative day. The results indicate that the action of DCA in immature, proliferating connective tissue is marked, and is considerably less or absent when connective tissue elements have reached partial or almost complete maturity.

The effect of DCA on connective tissue does not appear to rest on the basis of an altered nutritional status, but is probably mediated through a disturbance of adrenocortical function, namely an imbalance between hormones of the zona glomerulosa (excess of DCA) and those of the zona fasciculata (deficiency of glucocorticoids).

A profound difference in the response mechanism exists between resting and actively proliferating connective tissue.

HOCH, J. (1950.) **Synthèse d'une nouvelle substance hydro-soluble à haut pouvoir oestrogène. [A synthetic water-soluble oestrogen.]**—*C.R. Acad. Sci., Paris.* 231. 625-626. 3335

H. described the preparation of di(*p*-hydroxyphenyl) succinic acid, an amorphous powder, soluble in cold water, with a m.p. of 230°C. He stated that when administered *per os* to spayed mice the oestrogenic effect was the same as that obtained by the intravenous injection of the same dose of oestradiol benzoate.—E.M.J.

CONNER, G. H. (1951.) **Intravenous ether for general anesthesia in the bovine animal.**—*J. Amer. vet. med. Ass.* 119. 46-48. [Author's summary copied *verbatim*.] 3336

Intravenous ether was used for general anesthesia in 14 bovine subjects. Pentobarbital sodium, given by rapid intravenous injection, was employed as the induction anesthetic. Two anesthetic deaths resulted. In some of the animals, difficulty was experienced in maintaining the desired level of anesthesia.

Certain advantages as measured against other general anesthetics in the bovine animal are mentioned. In view of the advantages, further studies on the use of intravenous ether might be justified.

MUTOVIN, V. I. (1949.) **[Rational use of D.D.T. and of "hexachlorane" (benzene hexachloride) in animal husbandry.]**—*Veterinariya, Moscow.* 26. No. 6. pp. 7-10. 3337

More effective forms in which D.D.T. could be used, such as admixture with lipoids and dispensing in emulsions, were sought. Laboratory tests with six preparations were

made, followed by field trials with a 1% D.D.T. solution in petrol, applied with a moist cloth, to 20,000 horses, cattle and pigs. Eggs, larvae and adults of various arthropods—including houseflies, oestrids, lice, ticks and mites—were successfully repelled and/or eliminated and the animals were protected for a month after. Water emulsion of 0.1% D.D.T. in petrol and

0.1% benzene-hexachloride were used separately on 1,900 horses and 1,200 cattle in areas in which piroplasmosis was prevalent; all treated animals remained healthy, while some of the controls among them on the open ranges became infected. The control of equine encephalomyelitis by such parasiticides is advocated.—F.A.A.

See also *absts.* 3132-3133 (staphylococci resistant to antibiotics); 3135-3136 (mastitis); 3143-3145 (TB.); 3159-3160 (antibiotics against pasteurellosis); 3166 (sulphamerazine); 3173 (sulphonamides in abortus fever); 3185 (penicillin in leptospirosis); 3192 (pentamidine in dourine); 3196 (antricyde); 3200 (quinine resistance of *Pl. gallinaceum*); 3204 (toxoplasmosis); 3234 (vitamin B₁₂ in distemper); 3236 (grey lung virus); 3261-3264 and 3266 (insecticides); 3274 (sulphonamides against mouse trichinosis); 3275 (hookworm control); 3278 (hexachlorethane); 3279 (phenothiazine and copper sulphate for nematodes); 3280 (phenothiazine); 3304 (vitamin B₁₂); 3366 (excretion of insecticides in milk).

PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

FINDLAY, J. D. & YANG, S. H. (1950.) **The sweat glands of Ayrshire cattle.**—*J. agric. Sci.* 40. 126-133. [Abst. from authors' summary.] 3338

The authors studied the structure, distribution and dimensions of the so-called sweat glands in 21 body regions of each of five 3- to 4-year-old Ayrshire cows, and on calves and embryos.

In all the regions studied each hair follicle is accompanied by an arrector pili muscle, a sweat gland and a sebaceous gland, constituting a 'hair follicle unit'. In the skin of embryos the sweat gland appears as a single unbranched tube and in the skin of calves and cows it is a bag-shaped gland with a long slender duct which opens on the skin surface as a funnel-shaped outlet.

The glands have a poor blood supply and appear to be apocrine. The average number of sweat glands per sq. cm. of skin was 1871. Dimensions of glands were measured and their distribution is described.

REDDY, D. V. S. & SUBRAHMANYAM, K. V. (1950.) **The buffalo. Need for intensive studies on the natural history morphology and physiology of the buffalo.**—*Indian vet. J.* 27. 18-22. 3339

Although the buffalo is probably the oldest domesticated animal of India, little attention has been paid to the study of its natural history, morphology and physiology. The following factors require study: macroscopic and microscopic examination of the structure of the skin; the animal in relation to its physical environment, especially the physiological adaptations to the environmental temperature; origin and evolution of the buffalo.

Details of histological examinations carried out on skin from different regions of the body of the buffalo are described.—M. S. MENON.

FRASER, A. S. (1951.) **Competition between skin follicles in sheep.** [Correspondence.]—*Nature, Lond.* 167. 202-203. 3340

Density and fineness of fleece are closely correlated. F. suggested that this correlation might be due to competition between adjacent follicles for a limited amount of fibre substrate. Evidence in support of this contention is presented.—G. B. S. HEATH.

ANON. (1950.) **Fluid balance.**—*Lancet.* 259. 753. 3341

Although about a ton of fluid passes in and out of the human body every year, the water content remains constant, five-sevenths being within the cells and the remainder extracellular. If the fluid intake is deficient, the osmotic pressure of the extracellular fluid rises and thirst is created. The loss of body fluids leads, however, to the loss of salt as well as water, and the dehydration will not respond to water administration alone, salt being necessary in these cases. The posterior lobe of the pituitary gland secretes an antidiuretic factor in response to osmotic pressure changes in the blood reaching it and the suprarenal cortex controls the retention of sodium chloride. Excess of adrenal steroids may lead to alkalosis as well as oedema since more sodium is retained than chloride. A rapid means of determining the need for salt is to estimate the output of urinary chloride.—J. A. NICHOLSON.

EDWARDS, J. (1950.) **Factors influencing the relationship between the secretion of milk and butterfat.**—*J. agric. Sci.* 40. 100-125. [Author's summary and conclusions modified.] 3342

From a statistical examination of 1176 Jersey Register of Merit lactation records and of 857 lactation records made in a privately owned pedigree Jersey herd it was concluded

that: In the first half of lactation the amount of morning milk, and to a greater degree the amount of morning fat, is adversely affected by pressure inside the udder. There is no evidence of such a pressure effect later in lactation when milk volume has dropped. There is a fundamental inverse relationship between milk volume and fat per cent. The fat concentration of a.m. milk is consistently and significantly lower than that of p.m. milk, and this is independent of the total volume secreted. There is a specific 'seasonal' effect on fat concentration, also regardless of the milk volume. It is low in May and high in November. There is no specific effect of stage of lactation on fat per cent.

These effects are attributed to a number of factors which affect the function of the mammary gland, such as the nutrition, activity and rumen flora of the animal at different times of the day and seasons of the year.

EISA, E. A. (1950.) **The formation of lactic acid in the vagina of the adult rat.**—*Acta endocrinol.* 4. 285-290. [In English. Author's summary copied *verbatim*.] 3343

Using the Barker and Summerson technique it has been shown that the free acid in the vaginal lumen of the rat is in all probability lactic acid.

This substance is produced in increasing quantities as oestrus approaches. During early oestrus its concentration falls, but there is a second rise at about the time of ovulation.

The significance of this double cycle is discussed in relation to present knowledge of the cycles of glycogen deposition and of mitotic activity in the cells of the vaginal epithelium.

DE VRIES, A., HERZ, N. & HEIMAN-HOLLANDER, E. (1950.) **Observations on prothrombin consumption during clotting of normal blood in glass.**—*Acta med. scand.* 138. 219-224. [In English. Authors' summary slightly modified.] 3344

Prothrombin conversion during the coagulation of normal blood was studied with one-stage methods and with a two-stage method, using alcohol to block antithrombin activity. The results obtained with the latter method revealed that only a very small part of the available prothrombin is utilized to induce clotting of normal blood; more than 95% of the prothrombin is converted within one hour after the clot has been formed. The comparative data on prothrombin consumption obtained by the use of the one-stage and two-stage methods indicate the error involved in the application of one-stage methods for serum prothrombin determination.

BEHRENS, H. (1950.) **Die Blut-Liquor-Schranke beim Pferd. 1. Mitteilung: Der Kochsalzgehalt der Cerebrospinalflüssigkeit und des Blutserums.** [The blood-brain barrier in the horse.]—*Dtsch. tierärztl. Wschr.* 57. 103-104. 3345

Analyses indicated that the average NaCl content of the blood serum from healthy horses was 591.27 mg. % whereas that of the cerebrospinal fluid was 729.90 mg. %. This suggests that Donnan's equilibrium can only apply in a restricted sense between the blood and the cerebrospinal fluid.—J. A. NICHOLSON.

MUSTAKALLIO, E. & RISLAKKI, V. (1949.) **Om blodgrupper hos nötkreatur. [Blood groups in cattle.]**—*Nord Vet.-med.* 1. 750-758. [Abst. from English summary.] 3346

The authors attempted to ascertain if blood groups could be demonstrated in cattle. None could be found by the agglutinin method. Using absorbed immune sera and haemolysis tests with undiluted g. pig sera for complement the red blood cells could be placed in two groups. One group possessed only the antigen common to all blood corpuscles, which the authors designated as *a*, and the other group also another antigen, designated as *b*. The blood corpuscles from the cows employed in these experiments were either of type *a* or type *ab*. Through comparative titration experiments with 4 absorbed factor sera it was possible to ascertain the sensitiveness of the bovine corpuscles as far as the *b* factor is concerned.

Of the cows examined 67.7% belonged to group *ab*, 32.1% to group *a*. In Finland, among the thoroughbred herds, considerable differences are found with regard to these groups. Of the Ayrshire breed 12% belonged to group *a*. Of the West Finnish country race 41.9% belonged to group *a*, and of the East Finnish country race 63.6% belonged to group *a*. Group *ab* was represented most numerously among Ayrshire cows (88%), while its frequency was 58.1% in the West Finnish race, and 36.4% in the East Finnish race. As to the heredity of factor *b*, a small amount of material is presented here, from which it is reasonable to conclude that it is hereditary.

AGRIMI, P. (1950.) **Glicemia normale nei bovini della zona Apuana. [Normal blood sugar levels in the Massa-Carrara region.]**—*Arch. Vet. Ital.* 1. 283-294. [English, French, German and Spanish summaries. Abst. from summaries.] 3347

Blood sugar levels in 94 cattle aged up to seven years varied from 35-125 mg. %, the average in 65 cows being 70.55 and in 29 bulls

89-90. A moderate decrease in blood sugar levels was observed with increasing age.

MCCLYMONT, G. L. (1951.) **Identification of the volatile fatty acid in the peripheral blood and rumen of cattle and the blood of other species.**—*Aust. J. agric. Res.* 2. 92-103. [Abst. from author's summary.] 3348

Volatile fatty acid isolated from nine samples of peripheral blood from four cows contained, on a molecular basis, from 90.0-97.0% of acetic acid. The remainder comprised, as mean values, propionic acid, 2.39%; butyric acid, 2.51%; and a group of at least three acids between butyric and octanoic, 1.84%. Only traces of esterified acids lower than octanoic could be found in bovine blood lipoids. Volatile fatty acids were found also in the blood of the rabbit, g. pig, horse, and pig and in human plasma. Here again a high proportion of acetic acid was recorded.

Volatile fatty acid isolated from nine samples of ruminal contents from two cows contained on a molecular basis from 52.3-69.0% of acetic acid. The remainder comprised, as mean values, propionic acid, 21.8%; butyric acid, 14.4%; and acids higher than butyric (apparently largely valeric and hexanoic), 3.8%. This limited number of analyses indicated no gross effect of type of feed on the proportion of the acids in the rumen.

I & II. REID, R. L. (1951.) **Studies on the carbohydrate metabolism of sheep.** III. The blood glucose during insulin hypoglycaemia. IV. Hypoglycaemic signs and their relationship to blood glucose.—*Aust. J. agric. Res.* 2. 132-145 & 146-157. [Author's summaries, slightly modified and copied *verbatim*.] 3349

I. The response of sheep to intravenous insulin administration in doses of 0.5-10.0 units per kg. body weight has been studied in detail.

The rate of fall of blood glucose following insulin injection is considerably slower than in non-ruminants. Increasing the dosage of insulin from 1 to 5 units per kg., and sometimes to 10 units per kg., does not increase the depth of hypoglycaemia, but merely increases its duration. The blood-glucose level following such doses of insulin falls, in most sheep, to a level of 5-10 mg. per cent and remains relatively constant until it returns to normal. At these levels, severe hypoglycaemic signs were never observed, even when the hypoglycaemia was of several hours' duration.

These results are compared with those obtained by others on cattle and goats and it is suggested that the response of sheep to insulin is similar in all respects.

From a consideration of the experimental results, it is suggested that the differences in response to insulin between ruminants and non-ruminants may be due to fundamental differences in endocrine balance which, in turn, are conditioned by differences in intermediary metabolism.

II. The neurological signs observed in sheep during hypoglycaemia, induced by doses of insulin ranging from 1 to 10 units per kg., are described in detail. The signs varied in intensity from mild lassitude through muscular spasms to collapse and convulsive activity.

The severity of these disturbances was closely correlated with the level of blood glucose and the period during which it remained at a particular level. Levels of less than 5 mg. per cent. were invariably associated with signs which progressed beyond the stage of mild lethargy. Convulsive activity was seen only after the blood glucose had been reduced to negligible levels, less than 1 mg. per cent., and had remained there for upwards of one hour. Hypoglycaemic convulsions in rats were also found to occur at virtually negligible blood-glucose levels.

Attention is drawn to the considerable volume of literature which, particularly when the errors of analytical methods are taken into consideration, supports the contention that the blood glucose is negligible at the onset of convulsions in non-ruminant species, just as it is in sheep.

COMLINE, R. S., ROBERTS, H. W. & TITCHEN, D. A. (1951.) **Route of absorption of colostrum globulin in the newborn animal.** [Correspondence.]—*Nature, Lond.* 167. 561-562. 3350

In anaesthetized new-born calves, in which cannulae were introduced into the duodenum, caecum and thoracic duct, the authors found that the route of absorption of labelled colostrum globulins was from the small intestine, via the lymphatic system to the peripheral blood. Absorption took about one hour and was negligible after 60 hours of life. Lymph flow was 1-4 ml. per min. in the thoracic duct and the intestinal supply accounted for 50% of this quantity.—JOHN SEAMER.

I. QUIN, J. I., OYAERT, W. & CLARK, R. (1951.) **Studies on the alimentary tract of the Merino sheep in South Africa.** XVIII. —The effect of fasting on the activity of the ruminal flora of sheep and cattle.—*Onderstepoort J. vet. Sci.* 25. 51-58. 3351

II. OYAERT, W., QUIN, J. I. & CLARK, R. (1951.) **Studies on the alimentary tract of**

the Merino sheep in South Africa. XIX.—The influence of sulphanilamide on the activity of the ruminal flora of sheep and cattle.—*Ibid.* 59-65. 3352

III. CLARK, R. (1951.) Studies on the alimentary tract of the Merino sheep in South Africa. XX.—The failure of the rumen musculature to respond to carbamylcholine chloride when paralysed by potassium cyanide.—*Ibid.* 67-72. 3353

IV. CLARK, R., OYAERT, W. & QUIN, J. I. (1951.) Studies on the alimentary tract of the Merino sheep in South Africa. XXI.—The toxicity of urea to sheep under different conditions.—*Ibid.* 73-78. 3354

V. CLARK, R. & LOMBARD, W. A. (1951.) Studies on the alimentary tract of the Merino sheep in South Africa. XXII.—The effect of the pH of the ruminal contents on ruminal motility.—*Ibid.* 79-92. 3355

VI. CLARK, R. & QUIN, J. I. (1951.) Studies on the alimentary tract of the Merino sheep in South Africa. XXIII.—The effect of supplementing poor quality grass hay with molasses and nitrogenous salts.—*Ibid.* 93-103. [Authors' summaries slightly modified.] 3356

I. The ruminal contents were found to become progressively more watery during starvation although there was still a large volume present even after 96 hours without food. Both the fermentation of sugar and the digestion of cellulose were markedly depressed after 48 hours starvation. On a low protein diet of grass hay the appetite returned to normal immediately after starvation but on a higher protein diet of lucerne hay the consumption after starvation was low and only returned to normal after 3 to 5 days. There was evidence that the sheep regulated their protein intake in accordance with the adaptation of the ruminal flora. This did not appear to apply to the same extent to cattle.

II. Therapeutic doses of sulphanilamide depress cellulose digestion and appetite in ruminants. The fermentation of sugar and gas formation are also suppressed but only by higher concentrations. The absorption of sulphanilamide after intra-ruminal dosing is very slow and effective blood concentrations are not attained with recognised therapeutic dosage. The absorption of sulphanilamide is further retarded by paralysis of the rumen induced by atropine.

These findings raise the question as to the advisability of dosing sulphonamides to rumin-

ants in view of their deleterious effects on cellulose digestion and appetite and the low blood concentration of the drug achieved by dosing.

III. Acetylcholine did not restore motility to the isolated rabbit duodenal strip inhibited by hydrocyanic acid. Similarly ruminal paresis induced by hydrocyanic acid could not be successfully treated with carbamylcholine chloride. Such treatment caused an increase in the severity and duration of the ruminal stasis.

Carbamylcholine and hydrocyanic acid combine in causing respiratory and circulatory failure.

IV. The introduction of urea into the rumen of sheep caused acute intoxication characterised by atony of the rumen, muscular spasms and sudden death due to circulatory failure. The toxicity of urea depended on the activity of the ruminal flora, as determined by the basic diet, and the presence of available carbohydrate. Toxic symptoms after dosing with urea were associated with the formation of ammonia and a high pH value of the ruminal contents. They could be prevented or alleviated by the administration of acid.

V. The administration of sodium carbonate or sodium hydroxide into the rumen causes ruminal paresis if the pH exceeds approximately 7.5. Ruminal paresis can also be caused by the intravenous injection of sodium hydroxide or ammonia indicating that the paresis associated with alkalinity of the ruminal ingesta is of central origin. No corresponding effect could be demonstrated following dosing or injection with acid.

The paretic ruminal musculature is still capable of normal contraction as shown by the reaction to feeding and the response to carbamylcholine.

The possible significance of alkalinity of the ingesta in the aetiology of ruminal stasis is discussed.

VI. In a series of three experiments it was shown that the supplementation of poor quality grass hay with either urea or sodium nitrate, in conjunction with molasses resulted in increased appetite and improved maintenance of body weight. These beneficial effects were not only due to the extra nutrients derived from the supplements, but also to an acceleration of cellulose digestion allowing of a greater utilisation of the basic hay. Although the rate of cellulose digestion was accelerated the percentage of cellulose digested was not influenced. The feeding of 200 gm. of lucerne hay per day also increased the rate of cellulose digestion resulting in an increased consumption of grass

hay. Indications that the presence of the ammonia radical is deleterious to the activity of the ruminal flora will have to be studied further. The possibility of using nitrates to supplement the rations of ruminants will also have to be explored.

THAYSEN, A. C. (1946.) **The nutritional role of the microflora in the alimentary tract. The microbiological aspect of rumen digestion.**—*Proc. Nutr. Soc.* 3. 195-199. Discussion pp. 199-203. 3357

Determinations of the weight of the microflora obtained from centrifuged rumen liquor indicated that there is at least 404 mg. of dry microbial substance per 100 ml. of liquor. This contains 45% protein, 20% carbohydrate and 2% ether soluble substance. The microorganisms which pass out of the rumen are digested lower down the alimentary tract so that they must provide at least 180 g. protein, 80 g. carbohydrate and 8 g. ether soluble substance daily to the host. In addition synthesis of the vitamin B complex occurs in the rumen. The chief organisms concerned are iodophile cocci and a definite relationship exists between their population density and the amounts of protein and polysaccharide synthesized. Iodophile organisms are also present in the caecum of the horse, g. pig and rabbit.—J. A. NICHOLSON.

MASSON, M. J. & PHILLIPSON, A. T. (1951.) **The absorption of acetate, propionate and butyrate from the rumen of sheep.**—*J. Physiol.* 113. 189-206. [Authors' summary copied *verbatim*.] 3358

Acetate, propionate and butyrate are absorbed in substantial amounts from the rumen of anaesthetized sheep. The concentration of individual acids appearing in the blood leaving the rumen is not proportional to rates at which they leave the rumen. When equimolar solutions are present the concentration in the blood leaving the rumen is in this order: acetate > propionate > butyrate. The rate of absorption of acetate from the rumen is related to the concentration appearing in the arterial blood. Absorption of propionate produces little or no change in arterial blood, while in most instances this is true for butyrate. The reaction of alkaline solutions, when introduced into the empty rumen, rapidly moves towards neutrality. The final pH is close to that of blood. Chloride and carbon dioxide both appear in the rumen when aqueous solutions of the sodium salts of short chain fatty acids are placed in that organ. The quantity of carbon dioxide appearing in the rumen is related to, but is less than, the quantity of fatty acid absorbed. The rates

of absorption of acetate, propionate and butyrate in the anaesthetized sheep are influenced by physiological factors that have yet to be appreciated.

BULLOUGH, W. S. & VAN OORDT, G. J. (1950.) **The mitogenic actions of testosterone propionate and of oestrone on the epidermis of the adult male mouse.**—*Acta endocrinol.* 4. 291-305. [In English. Abst. from authors' summary.] 3359

The epidermal mitotic activity, as determined by the earclip and colchicine techniques, is considerably lower in castrated than in normal adult male mice, but the speed of completion of each mitosis is slightly higher in castrated animals. By subcutaneous injections of testosterone propionate the epidermal mitosis rate was restored to normal. Subcutaneous injections of oestrone stimulated the epidermal mitosis rate in castrated male mice.

It is concluded that androgens and oestrogens are mitogenic hormones.

CRAIGIE, E. H. [Ph.D. Professor of Comparative Anatomy and Neurology in the University of Toronto. Revised by.] (1948.) **Bensley's practical anatomy of the rabbit. An elementary laboratory text-book in mammalian anatomy.** pp. xii+391. Toronto: University of Toronto Press. London: Geoffrey Cumberlege, Oxford University Press. 8th Edit. fully revised. 32s. 3360

This is the 8th edition of Bensley's *Dissection of the Rabbit* and the editor has added information relative to laboratory experience in the dissection of this animal.

A preliminary section on General Anatomy follows the usual pattern given in guide books of this kind. The discussion of terminology in the section on Special Anatomy is welcome, the author employing terms appropriate to comparative anatomy, although more use might have been made of the expressions "cranial" and "caudal" which are equally appropriate to man and beast. The 20 pages devoted to regional sections of an advanced foetus, where photographs are paired with line drawings, are well worthy of close study.

There follows an account of osteology and the book concludes with a dissection guide occupying approximately half the total number of pages. The abdominal contents receive 50 pages of description and figure, the fore limb 12, the hind limb 15, the head and neck 30, the thorax 15, the vertebral and occipital musculature 6, the central nervous system 22 and one cannot criticize this allocation of space. If it is mentioned that the student would find some

difficulty in dissecting the peroneal muscles from the description given, that is no great fault as these muscles are among the most difficult to follow in comparative anatomy.

It can be said with confidence that if the student follows the dissection guide with care he will get a very good appreciation of the anatomy of the rabbit.—C. W. OTTAWAY.

FRIANT, M. & PERRY, J. (1950.) Morphologie du cerveau d'un foetus d'éléphant (*Loxodonta africana* Blum). [Morphology of the brain in an African elephant foetus.]—*C.R. Acad. Sci., Paris.* 232. 560-562. 3361

The telencephalon of the brain of a 12-month African elephant foetus is briefly described.—R. N. SMITH.

SCHENKER, J. (1950.) Zur funktionellen Anatomie der Prostata des Rindes. [The functional anatomy of the ox prostate.]—*Acta. Anat.* 9. 89-102. [Abst. in *Biol. Abstr.* 24. No. 8. p. 11. (1950.), copied *verbatim*. Signed: H. W. MOSSMAN.] 3362

Prostates from 32 animals of various ages and breeds were studied. These included 2 calves and 2 oxen. Grossly the gland consists of a pair of lobes. Each is subdivided into a relatively small external portion extending dorsally at the cephalic end of the muscular

urethra, and a long internal portion extending the full length of the muscular urethra, surrounding its lumen except for a narrow dorsal connective tissue septum. The urethral musculature surrounds the internal portion ventrally and laterally and is continued over the gland dorsally as a tendinous plate. The gland is tubular with numerous collecting ducts emptying into the urethra throughout the length of the gland. The epithelium is typically high columnar, but 5 cell types are described. The cells are sero-mucus, but at any given time some may secrete only albumin, some only mucin, and some both. Albumin collects in blister-like masses on the lumenward ends of the cells, but mucin leaves the cells without obvious alteration of the cell surface.

EVANS, D. G., PERKINS, F. T. & GAISFORD, W. (1951.) Hyaluronidase. Assay and administration.—*Lancet.* 260. 1253-1255. [Authors' summary copied *verbatim*.] 3363

A method is described by which the potency of testicular or seminal hyaluronidase, prepared for therapeutic purposes, may be assayed by determining the quantity neutralized by a standard amount of specific antihyaluronidase. The clinical indications and methods of using the enzyme are outlined.

See also absts. 3370-3388 (reproduction and reproductive disorders); 3389 (effect of air temperature on pigs); 3436 (book, biochemistry of B vitamins).

PUBLIC HEALTH, VETERINARY SERVICES AND VETERINARY EDUCATION

GUILLOT, G., NÉVOT, A. & THIEULIN, G. (1950.) Recherche, dans le lait en nature, de certaines bactéries pathogènes pour l'homme. [Examination of raw milk for bacteria pathogenic for man.]—*Lait.* 30. 297-349; & 500-507. 3364

Methods are described in detail for identifying the following pathogenic organisms in milk: the tubercle bacillus, brucella, typhoid and paratyphoid bacilli, streptococci and staphylococci. Each description gives the principle of the method, its technique, and interpretation. There are 31 references.

—W. R. BETT.

MEYN, A. & STÖFFLER, H. (1951.) Zur Kenntnis und Systematik der in der Milch vorkommenden Mycobakterien. [Mycobacteria occurring in milk.]—*Milchwissenschaft.* 6. 15-18. [English summary.] 3365

A general account of the subject.

—G. P. MARSHALL.

CLABORN, H. V., BECKMAN, H. F. & WELLS, R. W. (1950.) Excretion of DDT and TDE in

milk from cows treated with these insecticides.—*J. econ. Ent.* 43. 850-852. [Authors' summary modified.] 3366

In an experiment to determine the extent to which milk was contaminated when barns and cattle were sprayed with DDT and TDE [1, 1-dichloro-2, 2-bis (*p*-chlorophenyl) ethane] four dairy herds were treated with DDT and three with TDE for horn fly [*Siphona (Lyperosia) irritans*] control during the 1948 fly season. Each insecticide was sprayed as a 0.5 per cent emulsion in four ways: 2 quarts per animal over the entire body, 1 quart over the entire body, 1 quart on the dorsal half of the body, 1 quart on the ventral half of the body. Composite milk samples from each herd were taken at weekly intervals throughout the summer, and analysed by an established colorimetric method.

Individual treatments of the cattle with DDT caused the appearance of more insecticide in milk than did similar treatment with TDE. However, as TDE was applied more frequently to secure the same degree of fly control, the

average contamination for the season was about the same for both insecticides. Single sprayings with 2 quarts of insecticide caused more contamination than single sprayings with 1 quart of insecticide.

Dairy barns were sprayed with 5 per cent of TDE or DDT for fly control. In some instances treating the barn with these residual sprays caused an increase in insecticide content of the milk.

ALFORD, L. R., HOLMES, N. E., SCOTT, W. J. & VICKERY, J. R. (1950.) **Studies in the preservation of shell eggs. I. The nature of wastage in Australian export eggs.**—*Aust. J. appl. Sci.* 1. 208-214. [Authors' summary copied *verbatim*.] [See also *V.B.* 21. Absts. 3062 and 3063.] 3367

The wastage which occurred in Australian shell eggs exported to the United Kingdom was found to be due mainly to bacterial rots, almost all of which developed after discharge from the refrigerated space on shipboard. The out-turn of experimental shipments forwarded from several States followed closely the out-turn of control lots stored in Australia. Eggs from certain farms were found consistently to develop appreciable wastage, whereas those from some other farms were consistently free from rotting. The importance of preshipment factors in determining liability to wastage is, therefore, demonstrated.

The various types of bacterial rots are described and the relative frequency of their occurrence is listed. The three principal types were found to include over 95% of the observed rots.

GILLESPIE, J. M., SALTON, M. R. J. & SCOTT, W. J. (1951.) **Studies in the preservation of shell eggs. V. The use of chemical disinfectants in cleaning machines.**—*Aust. J. appl.*

Sci. 1. 531-538. [Authors' summary copied *verbatim*.] 3368

The concentrations of chemical disinfectants required to prevent bacterial rotting arising from machine cleaning were found to be high. The concentrations which controlled rotting destroyed almost all the bacteria on the shells, but concentrations sufficiently great to destroy most of the organisms on the shells were not necessarily sufficient to reduce rotting. The repeated use of hypochlorite solutions gave no indication of any cumulative benefit and the repeated use of a cationic detergent resulted in a progressive deterioration in the control of rotting.

SKRYABIN, K. I. & DOBROKHOTOV, A. M. (1949.) **[Veterinary science in the U.S.S.R. Lenin Agricultural Academy.]**—*Veterinariya, Moscow.* 26. No. 10. pp. 5-10. 3369

In 1935 the academy was granted the status of the authoritative agricultural institution in the U.S.S.R. and was reorganised into 10 faculties, including the veterinary faculty under Skryabin. His staff of 66 includes eight veterinary field officers. Among its varied functions the more important are the holding of conferences; the testing of new scientific ideas and their practical veterinary application; organizing measures against epizootics; planning future research work; the development of new centres; the establishment of curricula of veterinary colleges; assistance to young scientists; issue of publications.

All types of infectious diseases and infestations are investigated, together with the life cycle of parasites; sterility; nutrition; hygiene and stock management. Comment is made upon the slow adoption of new ideas by veterinarians and faulty organization in the veterinary services. All biological and veterinary work is to be remodelled on the new principles as propounded by Michurin and expounded by Lysenko.—F.A.A.

See also absts. 3225 (history of Danish veterinary services); 3269 (bilharziasis, a public health problem in the Pacific); 3415 (report, Leeward Islands); 3437 (book, milk hygiene); 3438 (book, meat inspection).

REPRODUCTION AND REPRODUCTIVE DISORDERS

DOORME, H. (1950.) **L'insémination artificielle du bétail bovin en Flandre Orientale. [The work of the artificial insemination centre in eastern Flanders.]**—*Rev. Agric. (Belge).* 3. No. 9. pp. 1-21. 3370

An account of the activities of the artificial insemination centre at Ghent, from its beginnings in 1946 and the various results so far obtained.—J. DEOM.

ANON. (1949.) **La fecondazione artificiale ed il controllo del gruppo sanguigno dei tori. [Blood groups and artificial insemination in cattle.]**—*Zootec. Vet. Milan.* 4. 753-754. [Only abst. given. Abst. from abst.] 3371

The rapid increase of the use of artificial insemination has given rise to problems in the preparation of pedigree certificates. If a cow has been inseminated more than once, it is

rarely with semen supplied by the same bull, and so the parentage of the offspring is open to doubt. The Holstein Friesian Association has therefore prepared a scheme, with the help of the Ohio State University, for classifying stud bulls according to their blood group. After Jan. 1st 1950 all bulls in the Society's stud book will be classified according to blood groups and all calves begotten by artificial insemination will be similarly grouped before they are admitted to the stud book. Details of the grouping will be kept confidential, not even the owners being informed. In cases of disputed parentage, an opinion based on the grouping of the calf in question and its reputed sire will be provided on payment of a small fee.

—R. MACGREGOR.

RANDALL, J. T. & FRIEDLAENDER, M. H. G. (1950.) **The microstructure of ram spermatozoa.**—*Exp. cell Res.* 1. 1-32. Abst. from abst. in *Biol Abstr.* Sect. F. 24. No. 9. p. 1. (1950.) 3372

The microstructure of the mature ram spermatozoon has been investigated by means of the electron microscope, and supplemented by preliminary optical studies. Various fixatives and stains were employed, and extensive use was made of ultrasonics as a means of partial disintegration. The results indicate a more complex structure, details of which are given, than has yet been found for other mammalian spermatozoa.

STRIKWERDA, R. (1951.) Mag de "excentrische staartinplanting" bij het stieren-spermatozoid tot de normale vormen worden gerekend? [**Excentric implantation of the tail in bull spermatozoa in relation to fertility.**]—*Tijdschr. Diergeneesk.* 76. 180-192. 3373

A young Friesian bull used for artificial insemination produced 46% of spermatozoa with excentric implantation of the tail. Of 117 inseminated cows 71 became pregnant, the conception rate being 35.9%. A bull with normal spermatozoa in the same artificial insemination station had a conception rate of 51.7% (396 cows, 302 pregnant). S. concluded that in bulls used for artificial insemination excentric implantation should not be considered as harmless.—C. A. VAN DORSSEN.

ROY, A., BHATTACHARYA, S., LUKTKE, S. N. & BHATTACHARYA, P. (1950.) **Studies on the reducing substances of semen. III. Fructolysis in buffalo semen and the relation of fructose content of semen to the volume of ejaculate and sperm concentration.**—*Curr. Sci.* 19. 50. 3374

In the semen of the Indian water buffalo,

Bos bubalis, the relationships between (i) initial fructose content and volume of ejaculated semen, and (ii) rate of fructolysis and sperm concentration, were linear, as found in rams and bucks. Initial fructose content in the three species studied varied inversely as the sperm concentration.—S. S. PRABHU.

HANCOCK, J. L. (1951.) **A staining technique for the study of temperature-shock in semen.**—*Nature, Lond.* 167. 323-324. 3375

Samples of fresh bull semen held at 30°C. were stained for five min. by dilution with a solution of 5 g. water-soluble eosin in 300 ml. 10% aqueous nigrosin at a series of temperature levels from 0°-30°C. The proportion of stained spermatozoa increases as the temperature of the stain decreases. The method is recommended for studying the effects of temperature shock in semen as dead spermatozoa have an increased staining propensity.—C.M.S.

HOFKENS, C. (1950.) **Sperma-onderzoek bij Hanen. [Examination of cock's semen.]—Vlaam. Diergeneesk. Tijdschr.** 19. 130-136. [English, French and German summaries.] 3376

The author describes a method of obtaining semen from cocks, giving some details about the amounts obtained, macroscopic and microscopic examination, staining and conservation procedures.—J. DEOM.

VORS, J. (1949.) **Grefte ovarienne intra-oculaire chez la lapine castrée. Application au diagnostic de la gestation. [Intra-ocular graft of the ovary in the spayed doe. Use in pregnancy testing.]** pp. 72. Paris: Vigot Frères. 3377

This is an extended account in thesis form of the paper by Marcenac and Vors [*V.B.* 20. 47]. The author reviewed the literature on tissue grafting with particular reference to intra-ocular grafts. Surgical techniques and histological changes in the grafts were discussed. The use of rabbits, with ovarian grafts in the anterior chamber of the eye, as test animals for Friedman pregnancy tests on women's urine and mares' serum was discussed and the results obtained by the author using eight such rabbits were described in detail. It was claimed that by the use of such rabbits the necessity for frequent laparotomy to inspect the ovaries is avoided and that the state of the ovarian tissue is obvious at all times.—ALFRED T. COWIE.

ROARK, D. B. & HERMAN, H. A. (1950.) **Physiological and histological phenomena of the bovine estrual cycle with special reference to vaginal-cervical secretions.**—*Res. Bull. Miss-*

ouri Agric. exp. Sta. No. 455. pp. 70. [Abst. from authors' abst.] 3378

A study of the physiological and histological phenomena during the bovine oestrous cycle was made on more than 100 cows of Guernsey, Holstein, and Jersey breeds in the Missouri Station herd. Particular attention was given to the properties of vaginal-cervical mucus at varying stages of the oestrous cycle.

Observations on the estrual behaviour of 68 cows are described. The intensity of oestrus tended to vary with age and season rather than with individuals. Data on 1503 oestrus periods on 1182 cows showed that the majority of the periods began in the morning. The average length of 504 oestrous cycles was 21.41 days with a range of 11 to 35 days. Eighty per cent of the cycles were within the range of 18 to 24 days. Analysis of variance for length of oestrous cycles showed significant differences between breeds, but there were no significant differences between seasons and age groups.

The mucosa of the vulva and cervix was most vascular at the approximate time of ovulation and least congested during 7 to 10 days post-oestrus. The cervix was usually relaxed during oestrus and contracted during dioestrus. Vaginal temperatures and heart rates were higher during oestrus than during di-oestrus and pregnancy.

A study was made of the characteristics of mucus collected at various intervals during oestrus. In general, the volume of mucus secreted, its flow, elasticity, surface tension, and water content decreased as oestrus progressed, but the number of leucocytes increased. *In vivo* the vaginal pH was significantly lower than the *in vitro* pH of withdrawn mucus. This difference did not appear to be due to carbon dioxide loss. Cervical mucus was more acid than vaginal mucus. Colour reactions were obtained from mucus that were characteristic of glycogen, peptide linkage, and the amino acids tyrosine, cystine, phenylalanine, and tryptophane. The colour tests were faintest during early heat and tended to become more intense as ovulation approached.

Cyclic changes in the histology of the bovine genital tract are described. The vagina reached the height of its development during the follicular phase of the cycle. The mucoid epithelium of the upper vagina and cervix began to secrete mucus actively during late pro-oestrus which probably serves to facilitate the ascent of spermatozoa. Uterine activity was maximum during midcycle in preparation for receipt of the zygote. The tubal cilia were longest and the epithelium highest and smoothest during

early post-oestrus and coincides with the time the ovum begins its journey down the tube. Cytoplasmic projections and nuclear extrusions were maximum at 9 to 10 days post-oestrus and probably represent a method of cellular regression.

A method of observing the penetration of bovine mucus by spermatozoa *in vitro* is described. The significance of the semen-mucus interface is discussed. The average penetration rate of sperm in oestrous mucus was 2.81 mm. per min. with a range of 0 to 6 mm. per min. When incubated at 37–39°C. sperm motility was maintained for an average of 3.30 hours longer in a semen-mucus mixture than in control semen samples. Sperm motility survival and maximal penetration were recorded in mucus collected during full and late heat.

A study of the relation of various characteristics of mucus to sperm penetrability and survival *in vitro* was made. Sperm penetrability and survival appeared to be correlated directly with the surface tension and flow elasticity and inversely to the concentration of leucocytes and pH of mucus.

VENGE, O. (1950.) Seksualhormoner. [Sex hormones.]—*Maanedsskr. Dyrlæg.* 61, 225–235. 3379

A review.—P. SCHAMBYE.

RAS CROTTO, N. P. (1950.) Interrelaciones hormonales en los fenomenos sexuales. [Sex hormones and sex physiology.]—*Gac. Vet., B. Aires.* 12, 214–228. 3380

A review with no new knowledge.

—R. MACGREGOR.

NICOL, T. & HELMY, I. D. (1951.) Toxicity of oestrogens.—*Nature, Lond.* 167, 321. 3381

Seventy-nine double-ovariectomized mature g. pigs were divided into groups which were given either trypanblue alone (0.8 ml. 1% solution per 100 g. body weight), or trypanblue together with various oestrogens. The combined toxicity of trypanblue and oestrogens was more than that of either alone. It was confirmed that the synthetic oestrogens (stilboestrol, dien-oestrol and α,α -di(*p*-ethoxyphenyl)- β -phenylbromo-ethylene) are more toxic than oestrogen and oestradiol benzoate. Oestrone, 0.1 mg. daily for six days, was more toxic than oestradiol benzoate. Stilboestrol was the most toxic oestrogen tested, and was more toxic by mouth than by intramuscular injection. 5 mg. dien-oestrol daily for three days, followed by 5 mg. stilboestrol dipropionate for three days proved to be less toxic than a 6-day course of either alone. Oral dien-oestrol may be less toxic in ethyl lactate than in arachis oil. The synthetic oestrogens,

unlike oestrone, were more toxic in small than in large daily doses, *e.g.*, mortality was higher after 0.1 mg. stilboestrol daily than after 1-5 mg. It may be that resistance can be acquired by overdosage. Loss of weight was more pronounced after synthetic than after natural oestrogens. P.M. most animals had perinuclear vacuolation of the liver cells.—N. DEAN.

VAN DER BURG, W. B. (1951.) Koppelsteriliteit bij runderen. [**Herd sterility in cattle.**] —*Tijdsch. Diergeneesk.* 76, 231-237. [English summary.] 3382

Herd sterility in cattle can be caused by infections (*Brucella abortus*, *Trichomonas foetus*, *Vibrio fetus*, etc.). In other cases dietetic factors play an important role. Oestrus often sets in when the cattle are changed over from stall feeding to pasture feeding or *vice versa*. A bull became infertile after abundant grass feeding; and became fertile again after changing to hay feeding.—C. A. VAN DORSSSEN.

MILLER, J. G. (1950.) A method of endometrial biopsy in the bovine and the study of biopsy specimens in cases of infertility. —*Thesis. Cornell.* pp. 95. 3383

A satisfactory method of obtaining biopsy specimens of the endometrium is described. Studies were made on 35 infertile cattle, in ten of which changes in the endometrium were noted. M. feels that because of the limited amount of tissue examined many pathological changes in a given animal may be missed. It is felt that the method might be very useful to observe changes that might take place under hormonal stimulation where the changes would be more general.—H. L. GILMAN.

PEARCE, L. (1950.) Hereditary osteopetrosis of the rabbit. III. Pathologic observations skeletal abnormalities.—*J. exp. Med.* 92, 591-600. [For previous parts, see *V.B.* 19, 225.] 3384

The skeletal abnormalities of the disease are described; the tooth abnormalities are to be described later, and the general macroscopic and histopathological changes were described in part IV [*V.B.* 21, 469]. The lesions in rabbits, as also the manifestations of the disease during life, resemble in general those of juvenile marble-bone disease of man. All the bones are affected, and normal bone development does not occur. Marked pathological changes are present at birth, and the entire course of the disease rarely exceeds five weeks. There appears to be a defective differentiation and development of the mesenchymal cell. In the bones, there is no well-defined marrow cavity or marrow, the

diaphysis being filled with an opaque, whitish, bony fibrous mass continuous with the metaphysis. Large numbers of osteoblasts are present, osteocytes are numerous and irregular in arrangement, and osteoclasts are also present, but usually not specially numerous. The total content of haemopoietic tissue in the bones is greatly reduced, accounting for the anaemia, which is often severe in longer-lived cases.

—E. COTCHIN.

HANCOCK, J. (1949.) Congenital photosensitivity in Southdown sheep. —*Proc. Ruakura N.Z. Frms. Conf. Week.* 1949. pp. 85-92. 3385

An inherited liver dysfunction causes phyloerythrin, derived from green food, to escape into the blood stream causing light sensitivity with skin irritation so severe that death always results—R. MARSHALL.

HANCOCK, J. (1950.) Congenital photosensitivity in Southdown sheep. A new sub-lethal factor in sheep.—*N.Z. J. Sci. Tech.* 32, 16-24. [Author's summary modified.] 3386

Conclusive evidence based on planned breeding experiments shows that this disease depends on a single recessive factor with full penetrance. This factor has been called "p", which may be classed as sub-lethal. Lambs affected by this disease invariably die if kept under normal outdoor conditions.

The distribution of the gene "p" in the Southdown sheep population of New Zealand is discussed. To decrease the frequency of the factor "p" the following measures seem practicable: avoidance of breeding from heterozygotes, outcrossing to untainted strains, detection of heterozygous animals by test mating. The last-mentioned measure is recommended only in the case of rams which are likely to be of very great importance to the breed.

WILLIS, R. A. (1950.) The borderland of embryology and pathology.—*Bull. N.Y. Acad. Med.* 26, 440-460. 3387

A distinction is drawn between the pathology of the foetus and that of the embryo which is referred to as teratology. In the foetus with its differentiated tissues resembling an adult in miniature the reactions of its tissues to poison and infection are similar to those of the adult. The effects of pathogenic agents in the embryo are the malformation of parts and organs. Damage to the embryo can result from interference with the zygote during early segmentation, partial constriction during gastrulation, oxygen deficiency or delayed fertilization. German measles affecting a woman during the

first two or three months of pregnancy is apt to cause certain characteristic defects in the child. This is an example of an infective disease, the virus and toxins of which have a selective damaging effect on certain parts of the embryo. Embryonic tumours are those which arise in early life from tissues that are still undifferentiated and which continue to proliferate at this embryonic level. Teratomas contain a variety of tissues quite foreign to the part and nearly all malignant teratomas contain a small or extensive area of rather characteristic undifferentiated mesh work of plump cuboidal cells. This is the most primitive embryonic component recognizable in these tissues. Like the tissues of the pregastrular embryo it is totipotent embryonic tissue from which all else that is found in this growth may spring.

—JAMES H. HALE.

HANCOCK, J. (1950.) **Lethal and other inherited factors causing abnormalities in New Zealand stock.**—*N.Z. Soc. Anim. Production. Proc. 10th Ann. Conf. Wellington, May 3rd,*

See also absts. 3168 (bovine contagious abortion); 3343 (lactic acid formation in the rat vagina); 3413 (report, Australia).

ZOOTECNHY

HEITMAN, H., JR. & HUGHES, E. H. (1949.) **The effects of air temperature and relative humidity on the physiological well being of swine.**—*J. Anim. Sci.* 8. 171-181. [Abst. from authors' summary.] 3389

Pigs of various weights were kept in a psychrometric room for periods averaging seven days with temperatures ranging from 40° to 115°F. with comparatively constant relative humidity and air flow. As the air temperature increased the body temperature and respiration rate (breaths per min.) increased and the pulse rate decreased. In addition the rate of change in body temperature, respiratory rate and pulse rate increased, and the feed consumption decreased.

At 96°F. a rise in relative humidity from 30 to 94% produced rapid distress in pigs weighing over 200 lb., and the respiration rate and body temperature increased rapidly.

The profound cooling effect of the evaporation of water was demonstrated. The further cooling effect of increased air motion on wet pigs has been shown as has the lack of effect of increased air motion on pigs on a dry floor when their skin temperatures are less than the temperature of the environment.

The behaviour of pigs under these conditions is discussed as are the P.M. findings in one pig which died at 100°F.

4th & 5th 1950 pp. 91-104. Discussion p. 105. 3388

An illustrated review of the occurrence in New Zealand of inherited factors causing death or non-fatal abnormalities in cattle, sheep and pigs. Among the conditions mentioned are: in cattle: parrot jaw ("impacted molars", "agnathia"), congenital dropsy in an Ayrshire calf, general ankylosis in a herd of New Zealand Friesians, inability to extend forelimbs, and thus to suckle, occurring in a Jersey herd; in sheep: congenital photosensitivity in Southdowns, congenital dropsy, amputated limbs, polycystic kidneys; in pigs: split ear deformity, atresia ani, cryptorchidism, scrotal hernia, intersexuality, kinked tail, polydactyly. The condition of "diverticulosis", first demonstrated by McFarlane, D., is one in which a series of intestinal diverticuli are found, usually in the terminal ileum along the mesenteric border; these may rupture and lead to a local or a fatal general peritonitis. The condition has a high incidence in the Ruakura herd of Berkshire pigs.

—E. COTCHIN.

ANDERSON, E. D. (1951.) **Modern insecticide sprayers.**—*Soap & Sanit. Chem.* 27. No. 2. pp. 121-123 & 139. 3390

A brief description of a number of different types of spraying apparatus.

—G. B. S. HEATH.

ANON. (1950.) **Dehorning crush and bail.**—*Agric. Gaz., N.S.W.* 61. 623, 644. 3391

Constructional details, including materials and dimensions are given. The crush is of simple design and is said to have proved satisfactory on a number of farms. Its novel feature is the use of a wooden lever to close the bail. A photograph accompanies the article.

—R. H. HAYMAN.

COOP, I. E. & DRAKE, J. H. (1949.) **Shearing ewes before lambing.**—*Proc. Ninth Ann. Conf. N.Z. Soc. Anim. Prod. Wellington. 1949.* pp. 122-126. 3392

The practice of shearing ewes a few weeks before lambing has become increasingly popular in the South Island of New Zealand during the last few years. It is claimed that it has the following advantages over the normal practice of shearing in the summer about 3-4 months after lambing: Tenderness or break in the shorn fleece is eliminated as the fleece is shorn through the break which frequently occurs at lambing time. There is a reduction in lambing trouble

and in casting of wool because of the greater activity and vigour of the shorn ewe. Lamb losses from severe weather are reduced, as shorn ewes seek shelter. The check in the condition of lambs caused by summer shearing is eliminated. Early shearing fits into the farm calendar better than summer shearing, which clashes with haymaking and cultivation.

It is necessary to provide a paddock with good grazing near the shearing shed, and shearing must be started early enough in the afternoon for ewes to get a good feed before night.

—J. F. FILMER.

SINCLAIR, A. N., SAVAGE, B. M. & WOOD, J. N. (1950.) **Bloodless castration and tailing of lambs: trials at experiment farms.**—*Agric. Gaz., N.S.W.* 61. 651-652. 3393

The so-called "bloodless" method of tailing and castrating lambs referred to in these trials involved the application of rubber rings to the tail and scrotum, so that the parts distal to the rings eventually sloughed. Docking and castrating with a knife proved quicker and cheaper, and the wounds healed more quickly. No difference was observed in the growth rate of the lambs, nor in the incidence of fly strike in the marking wounds.—J. M. KEEP.

DÓZSA, L. (1950.) Ein seltener Fall der Hyperplasia glandularis cystica nach Ovariectomie infolge Abbindung des Uterushorns bei einem jungen Hund. [**Cystic glandular hyperplasia after sterilization by ligation of the uterine cornua in a young bitch.**]—*Schweiz. Arch. Tierheilk.* 92. 320-323. 3394

An account of the examination of a two-year-old bitch with the history of an abdominal operation with the object of castration five weeks previously followed by symptoms of metritis. Ovarohysterectomy revealed that each horn of the uterus had been ligated about 3 cm. from the apex. There was cystic glandular hyperplasia of the uterus and corpora lutea in the ovaries.—E. COTCHIN.

OLBRYCHT, T. (1950.) Podstawy rozwoju zootechniki miczurinowskiej w ZSRR. [**Zootechny and the Michurin theory in the U.S.S.R.**]—*Med. weteryn.* 6. 335-340. 3395

Scientific production of foodstuffs, increasing their variety and viability, is the first essential for the improvement of livestock in the U.S.S.R. As the second essential, housing and proper hygiene is advocated. To accomplish this the U.S.S.R. has created Zootechnical Colleges, the first in the world.

The work of scientists in the U.S.S.R. is based on "progressive Darwinism" in contrast to the neo-Darwinism of the Western world.

Progressive Darwinism upholds heredity of acquired characters. Michurin claims to have shown that it is possible to change a breed of animal in the desired direction under the influence of environment which can be purposely created. Special feeding, rearing, training, etc., can be given according to the wish of the scientist.

In producing new breeds, cross breeding plays an important part. Cross breeding tends to make organisms more liable to changes, so the influence of environment on such an animal is much more pronounced than on a pedigree animal.

Dominant and recessive characters are claimed to be quite independent of genes. The dominant character depends upon the conditions under which the individual matures. Furthermore the dominant character of the young, being that of one of the parents, can undergo change before maturity is reached, becoming that of the other parent. Cross-bred animals are superior for the purpose of acclimatization. Michurin uses imported animals for crossing so that the dam and sire come from entirely different environments.—JOHN R. MITCHELL.

KOROPOV, V. M. (1949.) [**Veterinary knowledge in the development of animal husbandry.**]—*Veterinariya, Moscow.* 26. No. 9. pp. 7-11. 3396

This deals in general terms with recent discoveries, present defects and the future development of veterinary science in Russia. Strong official criticism is quoted regarding research work, to the effect that this is divorced from practical problems, is often of poor quality and that practical application of discoveries is unduly delayed. It is suggested that any sporadic divergence from normal in micro-organisms, if thought to be of value, should be followed up.

Various reforms in veterinary organization are suggested, improvements in the curricula of veterinary schools, new methods of improvements in research; improved liaison between the scientific and practising personnel; better use of experimental farms and the development of new breeds.—F.A.A.

GISATULLIN, K. G. (1949.) [**Regular veterinary inspection and records of horses.**]—*Veterinariya, Moscow.* 26. No. 12. pp. 31-34. 3397

It is recommended that the present method of cursory inspection by veterinarians, or only when requested to do so, should be altered to a system whereby the central veterinary district organization establishes a permanent supervision of all horses (and of other draught animals) in

its area. Regular periodic inspections should consist of a complete medical overhaul and prophylaxis against endemic diseases. Each horse should possess its own identity book giving full details of its anatomical features, medical history, working capacity, etc. The inspecting veterinarian should also note the general conditions on the farm, food, work and rest periods; apart from any medical treatment, he should prescribe the management for each horse and also instruct grooms in elements of veterinary science.

Every farm should keep a book in which all the above points are noted, with a record of every inspection, the measures taken and instructions given, a copy to be kept in the central office.—F.A.A.

GEDDES, H. J. (1950.) **Animal husbandry aspects of calf-rearing.**—*Aust. vet. J.* 26. 233-237. 3398

G. briefly reviewed some of the more important recent research on calf rearing and calf mortality. His own investigations at the McGarvie Smith Farm of Sydney University included weaning to grass alone at 2-3 weeks of age, the application of cud transfers, the rearing of calves on colostrum only and storage of the colostrum to provide a milk supplement during the first month of the calf's life. In addition, interesting experiments were carried out on "sucking" by calves and a possible analogy with thumb-sucking in infants was discussed. A close direct correlation was found between the rate at which milk was consumed and the tendency of the calf to "suck". When nipple feeding was practised, it was found that if the suckling period were extended to 15 min. the calves tended to suck each other; calves suckled on nurse cows did not suck each other. Again, there was a close correlation between the rate at which milk was consumed and the urge to suck after feeding.

G. also stressed the need for regulated nipple feeding as a partial answer to the white scour problem. Identical twin calves which were fed with no regulating jet in the suction pipe, so that they consumed their allowance of milk in less than three min., developed scours; those which were fed through a jet which compelled them to suck for 20 min. to obtain a similar quantity of milk, did not scour. Later, when the treatment was reversed, the effects on the calves were also reversed.—M. C. FRANKLIN.

SGAMBATI, A. (1949.) **L'allevamento bovino in Cirenaica. [Cattle breeding in Cyrenaica.]**—*Zootec. Vet., Milan.* 4. 466-481. 3399
Cyrenaica has a very variable climate, with

temperatures ranging from 120° to 20°F. Rain-fall is confined to the winter period Nov.-April. The soil varies from desert to rocky mountains with valleys lined with a clay alluvium. The indigenous stock consists of brown cattle, a mixture of the European type and Asiatic zebu (humped type). Similar mixtures are found in many parts of Asia and stand up well to most climates. This mixed type is fairly stable in breeding, but enormous variations are found in adults as a result of differences in feeding and environment. It yields good though rather dark beef with a small bone content. Improvement both of beef and dairy strains is prevented by the apathy of the owners.—R. MACGREGOR.

ANON. (1950.) **Beef cattle investigations in Texas, 1888-1950.**—*Bull. Tex. agric. Exp. Sta.* No. 724. pp. 79. 3400

A summary of 62 years of investigation into beef in its various aspects intended primarily for laymen, only conclusions being given and no detail of the experiments on which they are based. A brief historical section deals with the evolution of the beef industry in Texas, from the early days when the bison were being destroyed and the Red Indians confined to reserves in order to make room for the vast herds of Mexican Longhorns, up to the present days of the intensively fed "Compressed-Herford-Brahmin" cross. Further sections deal with breeding and feeding, indicating clearly which desirable traits are inherited and which are the result of feeding and environment. The various feeds themselves were examined and conclusions are given. A list of diseases, parasites and poisonous plants and the methods used to control them is included. There is a section devoted to the nutritive value of beef and the effect of various methods of cooking.

—R. MACGREGOR.

BULL, L. B., VASEY, A. J. & GAMBLE, L. C. (1951.) **A study on the mechanics of hand-feeding a maintenance ration to sheep during periods of drought.**—*Aust. vet. J.* 27. 59-62. [Authors' summary copied *verbatim*.] 3401

The experiment showed that a mixture of equal parts by weight of wheat and lucerne chaff can be fed to sheep weekly as a maintenance diet, and that the well-being of the sheep will not be significantly less than that of comparable sheep given the same amount of food but in daily portions. If the method of weekly feeding is continued during cold winter weather the sheep will fail under the strain somewhat earlier than those given their food in daily portions.

The results demonstrate that it is unnecessary to add repellent substances to food mixtures to restrict the daily intake by sheep. Indirectly they show that a food supplement need not be given to sheep in daily portions for full benefit to be obtained from it.

HEWETSON, R. W. & RUDDLE, R. P. (1950.)
An automatic feed hopper.—*Qd. agric. J.* 71.
328-331. 3402

A metal container is placed above the partition dividing two milking bails. From it a chute leads into a feed trough in each bail. By means of movable metal plates in the chute a measured quantity of feed can quickly be delivered to the feed box.

The device is efficient and labour saving. Sketches and photographs accompany the article.—R. H. HAYMAN.

PAYNE, W. J. A., LAING, W. J. & RAIVOKA, E. N. (1951.) **Grazing behaviour of dairy cattle in the tropics.**—*Nature, Lond.* 167.
610-611. 3403

Grazing behaviour of European cattle in the tropics is very different from the behaviour of the same type of cattle in temperate zones. From their studies, the authors conclude that European type cattle in tropical countries should be placed in the best pastures at night and early morning, and that they require shady paddocks for daytime grazing.—G. B. S. HEATH.

TECHNIQUE AND APPARATUS

SHOEMAKER, R. N. (1950.) **A new microculture slide.**—*Science.* 112. 53-55. 3404

A microculture slide useful for teaching purposes and for photomicrography consists of an ordinary glass slide with an unpolished channel half an inch wide and 1 mm. deep. Melted seeded agar is allowed to flow by capillarity into the space formed by the channel and a cover slip. The culture may then be incubated in a petri dish containing a piece of moist cotton. The slide is useful for temporary or permanent mounts.—C.M.S.

CLARK, L. C., JR. (1951.) **An easily constructed apparatus for preparing ultrafiltrates.**—*J. Lab. clin. Med.* 37. 481-484.

[Author's summary copied *verbatim*.] 3405

An ultrafilter, easily constructed from materials available in the laboratory, is described.

It consists of a series of rubber gaskets and sheets of cellophane which, when clamped together, alternately provide chambers for the fluid to be filtered and for collection of the ultrafiltrates. Sheets of a rayon-base paper, placed within the filtrate collection gaskets, serve ideally to separate the sheets of cellophane without materially occluding its filtering surface. A series of holes punched in the gaskets serves to conduct the fluid along the edge of the gaskets, while syringe needles serve to transmit the fluid from the holes to the lumen of the gaskets. Similarly placed needles in alternate gaskets provide for escape of the ultrafiltrate. Filtration is conducted at about 1 atmosphere pressure. The basic design may be applied in the construction of filters having filtering surfaces anywhere from 5 to 10,000 square centimeters.

See also absts. 3149 (methods for testing virulence of acid-fast bacilli); 3152 (freeze-dried BCG); 3190 (staining of bacteria); 3375 (staining of semen); 3390 (insecticide sprayers); 3391 (dehorning crush); 3393 (bloodless castration and tailing of lambs); 3402 (automatic feed hopper); 3435 (book, surgery); 3439 (book, examination technique).

MISCELLANEOUS

BEVERIDGE, W. I. B. (1951.) **Commentary: teaching the art of research.**—*Research.* 4.
97-101. 3406

Research is a creative art and not a logical science and there is no reason why the general principles used in teaching the arts should not be applied to the teaching of scientific research. Scientific tastes must be based on a good scientific education and a love of science: reading the original works of some of the eminent men of science fosters an appetite for research and conveys something of its spirit. Style varies widely and ranges from the inductive method to that of speculation, from the procedure of the perfectionist to that of the excessively en-

thusiastic worker who seldom has sufficient patience to complete properly any one investigation. A proper respect for individuality is necessary and while the systematic type is often critical of the speculative it must not be forgotten that most great men of science have been highly speculative and intuitive.

"Chance favours only the prepared mind", wrote Pasteur, and the research worker should always be prepared to detect the chance clue and to connect it with other events and give it significance. The empirical element adds an extra thrill of adventure to an otherwise rational approach.

Planning of experiments must not be con-

fused with planning of research. The research student often needs some instruction in the planning and designing of experiments and in the general principles of experimentation. Most hypotheses prove to be wrong and new knowledge often comes incidentally from a chance observation or an unexpected result: such events should not be disregarded because they do not fit readily with current beliefs.

Many great ideas are the product of intuition—a sudden flash of inspiration. Prolonged contemplation of a problem, freedom from competing interests and discussion with others are factors which favour the creation and capture of intuitions. The greatest tool of research is still the human brain. No effort is spared to get the best results from scientific apparatus: should we not direct at least as much study to the best ways of using the scientist's mind?

B. presents a strong plea for the teaching of something of the art of research, at least to those engaged in medical and biological sciences. Such teaching should in no way attempt to produce standardization or uniformity of the young research worker but should rather open wider the door of discovery so that he may better profit from the vista that is set before him. A certain amount of discipline is needed, but also much freedom.—E. G. WHITE.

SASS, H. (1950.) *Militær-veterinære opgaver i det moderne forsvær. [The military veterinarian and modern defence.]—Maanedsskr. Dyrlaeg.* 61. 363-368. 3407

A discussion of the change in duties from

the care of horses and other army livestock, to food inspection and to a reduced extent to the care of transport animals and guard dogs. Atomic warfare would complicate the veterinarian's duties especially in the field of food inspection.—J. EDWARDS.

BUSH, D. L. (1951.) *Immediate effect of the atomic bomb on Japanese army animals with the Hiroshima Division.*—*J. Amer. vet. med. Ass.* 118. 221-228. 3408

Immediately after the Hiroshima atomic explosion approximately one third of all animals died of flash and thermal injuries within a radius of 2,000 metres from the centre of the explosion. Within this radius, all the cattle, 81% of the horses, 78% of the pigs and 66% of the fowls belonging to the Japanese army were destroyed. Beyond this radius there was 100% survival of all species.

—J. A. NICHOLSON.

ANON. (1950.) *I.C.I. film catalogue.* pp. 29. London: Imperial Chemical Industries Ltd. 3409

This is a loose leaf catalogue of all films made by the I.C.I. Film Unit. As at the end of 1950 some 60 films were available, classified as medical (including physiological), agricultural, veterinary, instructional films for schools and a few films of general interest.

Each film is briefly described. The six veterinary films are devoted to hygiene on the farm, mastitis, contagious abortion, tuberculosis, sterility and phenothiazine.

—J. EDWARDS.

REPORTS

GREAT BRITAIN. (1949.) *City and County of Newcastle upon Tyne. Annual Report of the Veterinary Officer for the year 1949.* [THORNTON, H.] pp. 22. Newcastle-on-Tyne: Co-operative Printing Society Ltd. 3410

About 50% less horses were slaughtered than in the previous year, because of increased supplies of rationed meat, smaller supply of horses and exemplary penalties imposed on those found guilty of illegal practices in this connexion.

A case of arsenical contamination of imported Italian pears was dealt with. It was thought to have come from the use of an insecticide.—W. S. MARSHALL.

CANADA. ONTARIO. (1951.) *Annual report of Ontario Research Foundation, 1950.* pp.

24. Toronto: Rous and Mann Press Ltd. [Items of veterinary interest pp. 14 & 15.] 3411

TULARAEMIA was confirmed among a stock of wild beaver. A study of the life cycle of *Leucocytozoon* in ducks has been undertaken.

Investigation of the part played by body fluids and tissues of *Ascaris* in producing sensitivity, and shock and immunity in the host has been abandoned because the workers themselves became so sensitive to the material. Study is in progress of the larval behaviour in white mice of *Ascaris* species which are morphologically similar as adults, but which have different hosts.

SWIMMERS' ITCH, a disease due to attack by cercariae which emerge from snails living in lakes, was investigated. An interesting observation was that most of the snails became in-

fects in the spring and autumn; it is believed that the seasonal incidence of infection may be connected with visits of migratory birds.

—G. B. S. HEATH.

AUSTRALIA. (1950.) Queensland. Annual report of the Department of Agriculture and Stock for the year 1949-1950. [COLLINS, H. H.] pp. 99. Brisbane: A. H. Tucker, Govt. printer. Items of veterinary interest pp. 36-37, 44-79. 3412

A number of outbreaks of LEPTOSPIROSIS (ICTERHAEMOGLOBINURIA) or "REDWATER OF CALVES" occurred. Adult cattle were also affected and had fever followed by anaemia and jaundice. In some cows there was permanent udder damage and depression of milk yield was always serious. Laboratory examination was necessary to differentiate leptospirosis and tick fever (babesiasis) in adult cattle. Spirochaetes may be demonstrable in the urine of calves for three months after infection. The disease is spread chiefly by the urine.

The buffalo fly, *Siphona*, spread further south than in the previous two years but did not reach the point of furthest extension of some years ago. It was considered that both climatic and insecticidal influences (use of D.D.T. and benzene hexachloride) limited the extension which was favoured by the prevailing weather conditions. Chlordane was an effective treatment.

CATTLE TICK (*Boophilus microplus*) INFESTATIONS were heavy and extended into regions not usually affected. Dipping in D.D.T. undoubtedly prevented what might otherwise have been a very serious extension. Application of insecticides by a "fogging" machine was not effective. D.D.T. continued to provide very effective control, particularly where the dips were under official supervision. Mixtures of benzene hexachloride and arsenic gave erratic results in the field though laboratory trials showed increased killing powers. Chlordane (0.25%) and toxaphene (0.4 to 0.5%) gave satisfactory control in field trials in which dairy cattle were sprayed. Parathion (E605) showed promise but a great deal of work on toxicity is required. Compound 497 (dieldrin) was very effective. Application of the newer insecticides by spraying in dairy herds obviates many of the difficulties associated with devising formulations suitable for dipping. [Chlordane, compound 497, toxaphene are chlorinated hydrocarbons. Parathion is *o*-diethyl, *o,p*-nitrophenyl thiophosphate.]

Studies on seasonal incidence of helminth parasites of cattle were continued in association with the Veterinary Parasitology Laboratory of

the Commonwealth Scientific and Industrial Research Organization. Calves may become infested at an early age. Strongyloides and *Cooperia* are often present at four weeks of age. *Haemonchus*, *Ostertagia* and *Trichostrongylus* appear a little later, while *Bunostomum* and *Bosicola* are not present until calves are 3-4 months old. The worm burden increases until calves are 5-6 months old and then decreases rapidly. Development of immunity appears to be specific and calves may be throwing off a *Cooperia* infestation while picking up *Haemonchus* infestation. Immunity to *Haemonchus* is not lasting, but immunity to *Bunostomum* is permanent.

Development of outbreaks of HELMINTHIASIS in cattle require much more favourable conditions than those which may produce outbreaks in sheep. Calves born in late spring and early summer appear to suffer most because they are weaned in late summer and autumn when chances of acquiring heavy worm burdens are greatest. Calves in beef herds are commonly born in late spring and early summer and may not develop heavy worm burdens until the late summer and autumn after weaning, when they are 12-18 months old. Phenothiazine, while very effective against *Haemonchus* and *Bosicola*, is not very effective against *Bunostomum* or *Cooperia*.

Two severe infestations of the liver with *Stephanurus dentatus* were seen in calves.

SOLEY'S DISEASE was described in the previous report. More than one condition, including bracken poisoning, occurs on the property concerned.

Other diseases of cattle noted are BOVINE CONTAGIOUS PLEURO-PNEUMONIA, BRUCELLOSIS, VIBRIONIC ABORTION, LEAD POISONING, PLANT POISONING (*Xanthium pungens*, *Solanum stelligerum*, *Pratia concolor*, *Nerium oleander*, *Ricinus communis*, *Passiflora foetida*, *Cryptostera grandiflora*, *Philydrum lanuginosum*), STERILITY, MASTITIS, FOOT ROT and BLACKLEG. Cattle husbandry work included urea feeding, depression of butterfat content of milk, supplementary feeding, calf feeding, artificial insemination, sire surveys, crop fattening, mineral deficiency, road transport.

Field investigations were continued on the seasonal and geographical distribution of BIRDSVILLE DISEASE OF HORSES, and the relationship of incidence to distribution and growth stages of *Indigofera enneaphylla*. Cases of KIMBERLEY or WALKABOUT DISEASE have been reported from regions in which *Atalaya hemiglauc*, the usually accepted cause is absent or extremely rare. Further investigations failed to establish

the cause of "Oesophageal disease" in which there is extensive ulceration of the oesophageal mucosa, emaciation and often a fatal termination. ATAXIA (COASTAL STAGGERS) was produced by feeding *Gomphrena celosioides*. Other plants suspected of causing poisoning in horses were *Ranunculus* spp., *Malva parviflora* and *Cryptostegia grandiflora*.

Deaths commonly occur among sheep brought from the southern states by long railway journeys, both during transit and after arrival. In the latter case death is often due to ingestion of poisonous plants, e.g. *Wedelia asperima* (sunflower daisy) and *Threlkeldia proceriflora* (soda bush). Deaths during transit appear to be due to salmonellosis. The plant suspected of causing GEORGINA RIVER DISEASE, *Eremophila latrobei*, was toxic when fed to sheep experimentally.

Experimental infections with MELIOIDOSIS in sheep (caused by *Pfeifferella whitmori*) produced abscesses in lungs, liver, spleen, sometimes joints of limbs, and in most cases severe ulceration of the nasal cavity. ENTEROTOXAEMIA was reported for the first time in Queensland.

URINARY CALCULI in sheep consisted of either calcium carbonate or a mixture of calcium and magnesium carbonates and were prevalent in sheep grazing herbage with a high soluble oxalate content.

Other sheep diseases noted are BRISKET ABSCESS, infections due to penetration of grass seeds (tetanus and *Clostridium oedematiens*) and EPIDIDYMITIS. Severe waves of BLOWFLY STRIKE occurred, particularly BODY STRIKE, and field trials of the preventive value of spraying D.D.T. and benzene hexachloride were carried out.

Sheep husbandry studies included libido in rams, supplements of thyroid extract and vitamin A, heat regulating function of the scrotum, neo-natal mortality of lambs.

Observations on the causes of respiratory diseases of pigs were carried out at Oonoonba field laboratory at Townsville. SWINE ERYSIPELAS outbreaks occurred. An outbreak of GLASSER'S DISEASE responded spectacularly to sulphapyridine. A new scheme for BRUCellosis testing was begun.

The frequency of the common diseases of poultry is shown in a table.

Toxicological observations in relation to domestic animals included a survey of water supplies for nitrates. One sample, incriminated in causing maladies in young stock contained 4.013 p.p.m. Studies on FLUOROSIS IN SHEEP revealed that water containing as little as 5

p.p.m. fluoride seriously affects teeth and bones.—H. MCL. GORDON.

AUSTRALIA, WESTERN AUSTRALIA. (1950.)

Annual report of the Department of Agriculture for the year ended 30th June, 1949.

[CLARK, A. L. McK.] pp. 62. Perth: William H. Wyatt. [Items of veterinary interest pp. 46-49.] 3413

The Pharmacy and Poisons Act regulations have been amended to enable dairy farmers to obtain their requirements of penicillin for treatment of MASTITIS without prescription.

Control of TB, in dairy herds is by tuberculin testing, slaughter and compensation. In 45 herds (3,362 animals) retested in the Metropolitan Area after an interval of 12 months there was an overall incidence of 4.76% compared with 40.5% in the initial tests in 1947-48. In 194 country herds (13,005 animals) tested for the first time the incidence was 18.6%. The initial tests conducted in the South West Dairy Area, the principal country area tested, revealed an incidence of 17.8%, but retests in the ensuing six months indicated a reduction to 3.7%. During the year 25,710 tuberculin tests were applied and 2,919 reactors were slaughtered.

The voluntary control scheme for PULLORUM DISEASE has continued to operate. In all but one of the 20 flocks participating, the incidence of infection has been reduced to less than 4%.

The widespread use of strain 19 vaccine has resulted in a marked reduction in losses due to CONTAGIOUS ABORTION. BLACKLEG has appeared in several areas where it was hitherto unknown but vaccination has prevented serious losses.

A dried chick embryo vaccine has given excellent results in controlling INFECTIOUS LARYNGO-TRACHEITIS on infected properties.

To increase the efficiency of dipping against lice and ticks and to reduce the number of undipped sheep offered at sales, the Regulations have been amended to provide for the dipping of sheep within six weeks, instead of three months, of the date of shearing.

Further observations on PHOSPHORUS DEFICIENCY in selected herds in the South-west confirmed that sub-normal blood phosphorus values were common in cows maintained on green pastures of good phosphorus status. Adequate phosphorus supplementation quickly raised and maintained blood values at "normal" levels. A solution of phosphate derived from superphosphate after the elimination of fluorine, administered either in the drinking water or in the feed, was a cheap

and effective method of phosphorus supplementation. Experiments to determine the significance of the low blood phosphorus levels and their relationship to production and infertility are projected.

Losses in wethers due to URINARY CALCULI were serious in the wheatbelt and marginal areas. The causative factors have not been established but appear to be associated with dry feeding and hot dry climatic conditions.

KIMBERLEY HORSE DISEASE is being studied by a Committee of Investigation.

The investigation of SHEEP INFERTILITY ON SUBTERRANEAN CLOVER PASTURES is still a major project. Both at the Animal Health and Nutrition Laboratory (Perth) and in London efforts are being made to obtain more highly purified extracts of clover for assay purposes and to isolate and chemically characterize the clover oestrogen. Investigations of the mechanism of infertility and of the permanence of lesions in the ewe are being continued.

—H. W. BENNETTS.

MALTA. (1949.) Report on the working of the Department of Agriculture during October 1938 to September 1946 and the Agricultural Year 1946-47. [BIASINI, R.] pp. cxlv. Malta: Govt. Printers. Items of veterinary interest pp. lxxxii-ciii. 3414

The control of animal disease is hampered by the outlook of the local farmer, who is a fatalist as regards disease and resents interference with his animals—particularly any sort of injections.

F. & M. DISEASE affected local cattle as an epizootic in 1944. There was a 20% mortality rate. The slaughter policy as used in Great Britain was not adopted for economic reasons and the outbreak lasted from June to October. A fresh outbreak occurred in the spring of 1946. Infection in this case was mild and there was only one death.

A SWINE FEVER epizootic occurred in 1945-46 and compulsory immunization against SWINE ERYSIPELAS was introduced in 1942.

In 1945 a TUBERCULOSIS Eradication Scheme was approved but was not put into effect.

Rabbit farming increased considerably but VENT DISEASE and FOOT MANGE interfered with breeding.

In December 1946 RINDERPEST was introduced by cattle imported from the Sudan; 48 outbreaks were eventually confirmed on the island apart from the two infected imported cargoes. Compulsory vaccination was introduced but was disappointing in its results. Im-

portation of cattle was prohibited in July 1947, and as a result the situation improved steadily.

—W. S. MARSHALL.

LEEWARD ISLANDS. (1946.) Report of the Director of Agriculture for the year 1946. [HUTSON, L. R.]—*Rep. Dep. Agric. Leeward Is.* 1946. pp. 26. Items of veterinary interest pp. 18-19 & 23-26. 3415

In the livestock census taken during the year 18,959 cattle, 11,699 sheep, 15,884 goats, 5,878 pigs, 2,989 horses and mules and 66,274 poultry were enumerated. A scheme for the provision of a Veterinary Service in St. Kitts by a panel system had been in operation since March 1945. The Veterinary Officer administering the scheme reports that so far the veterinary office and laboratory provided for in the scheme has not materialized.

No epizootic diseases occurred during the year. In Antigua, 1,141 tuberculin tests revealed 12.8% reactors. No figures are given of the incidence of TB. in cattle in St. Kitts-Nevis and Montserrat.

EQUINE COLIC, due to faulty management and indigestible fodder, occurred during 1946 in 5.5% of the total equine population, the mortality being 9 deaths in these 37 cases, as compared with 7 deaths in 19 cases during 1945.

Other conditions mentioned are HELMINTH INFESTATION of all livestock which is controlled by the use of phenothiazine given as a drench or in a salt lick; dipping for the control of ticks and other ectoparasites.

The occurrence of AVITAMINOSIS, HYPOCALCAEMIA and HYPOMAGNESEMIA is mentioned, but no details are given.—J. A. GRIFFITHS.

BRITISH GUIANA. (1950.) Administration report of the Director of Agriculture for the year 1948. [CROUCHER, H. H.] pp. 20. Georgetown: F. A. Persick Ltd. Items of veterinary interest pp. 6-8 & 14. 3416

A preliminary survey of the TB. position revealed an incidence of 10.9% reactors. There was no serious outbreak of notifiable disease.

TRICHOMONIASIS was found to be endemic in East and West Demerara and will have to be controlled by artificial insemination. This is hindering the work of breed improvement.

—W. S. MARSHALL.

BRITISH GUIANA. (1950.) Administration Report of the Director of Agriculture for the year 1949. [CROUCHER, H. H.] pp. 20. Items of veterinary interest pp. 5-6 and 12-14. East Demerara: The Argosy Company Ltd. 3417

An outbreak of ANTHRAX was effectively controlled by the use of spore vaccine.

A policy of improved breeding for beef has been pursued by supplying farmers with bulls and by castration of undesirable young bulls. In spite of this beef production declined during the year, owing to expansion of the rice industry and lack of proper drainage on cattle pastures.

After investigation of records it has been decided, against the generally held belief, that pure bred Holstein cows are the most suitable for milk production under local conditions. The policy of cross breeding at the Government farm has consequently been brought to an end.

—W. S. MARSHALL.

EAST AFRICA. (1949.) Annual Report of the East African Veterinary Research Organisation, 1949. [BINNS, N. R.] pp. 12. [fcp.] [Mimeographed.] 3418

Activities were curtailed owing to reorganization arising out of the serious disease situation (RINDERPEST) in Kenya and Tanganyika following the use of certain batches of Kabete attenuated goat virus.

The preparation of vaccines and sera was handed over to the Department of Veterinary Services, Kenya and three of the staff were also seconded. Full establishment of research and re-establishment of production will await completion of the new station at Muguga North. Work on the following subjects has been carried out or started, details being given: TUBERCULOSIS survey in Tanganyika; TRYPANOSOMIASIS and antrycide; BOVINE CONTAGIOUS PLEURO-PNEUMONIA; studies on ticks; cattle dips; HELMINTHIASIS, with special reference to ruminant strongyles and bovine paramphistomes; animal nutrition.—R. G. MARES.

ZANZIBAR PROTECTORATE. (1948.) Annual Report of the Department of Agriculture for the year 1947. [WILLIAMS, R. O.] pp. 55. Items of veterinary interest pp. 32-37. Zanzibar: Govt. Printer. Shs. 2. 3419

The Veterinary Officer is a member of the Department of Agriculture.

There is a Government stock farm of 193 cattle, goats, sheep and poultry. Lactation figures are given as are figures of a cattle census, imports of cattle and of stock slaughtered for food.

Animal health has been good on the farm as well as in the Protectorate as a whole. Four calves died of PNEUMONIA and six of WHITE SCOUR on the farm and there was one case of MASTITIS. TRYPANOSOMIASIS was treated with phenanthridinium. There were two deaths from EAST COAST FEVER, two from PIROPLASMOSIS, one from ANAPLASMOSIS. There was a small

outbreak of Cow Pox and outbreaks of CONTAGIOUS CONJUNCTIVITIS caused loss and blindness but treatment and segregation was reasonably successful in cure. One death from HAEMONCHIASIS occurred. The laboratory examined 1,023 blood smears and 1,070 animals were treated at the Zanzibar clinic.

—R. G. MARES.

ZANZIBAR PROTECTORATE. (1950.) Annual Report of the Department of Agriculture for the year 1949. [SWAINSON, O. S.] pp. 64. Zanzibar: Govt. Printer. [Shs. 2.] Items of veterinary interest pp. 27-32. 3420

BOVINE CONTAGIOUS PLEURO-PNEUMONIA (introduced from Kenya) and CANINE DISTEMPER were the only epidemics encountered.

A small outbreak of ANTHRAX in goats occurred following their importation from Tanganyika.

On investigation, by tuberculin testing, of the level of TB., from 0.5% to 2.25% of the cattle were found to be affected. It would appear that non specific reaction is inherent in the local zebu stock and bears no relation to the mammalian reaction.

Antrycide methyl-sulphate superseded dimidium bromide in the control of TRYPANOSOMIASIS.

An investigation into the incidence, breeding, and movement habits of *Glossina austeni* was carried out.

A record of the stock farm is appended.

—W. S. MARSHALL.

NORTHERN RHODESIA. (1950.) Veterinary Department. Annual report for the year 1949. [HOBDAI, J.] pp. 22. Lusaka: Govt. Printer. 1s. 3421

Despite the drought early in the year the livestock as a whole thrived and increases in numbers were recorded in all species. There are now about 900,000 head of cattle, 100,000 sheep and 45,000 pigs. Plans have been made to improve the marketing of indigenous livestock and to improve the livestock itself by payment of bounties for high grade stock that has been well cared for. Disease seems to have been slight, though TB. has been found to be commoner than was supposed and 2% of the 6,000 cattle tested were found to be reactors. TRYPANOSOMIASIS is being controlled with dimidium bromide. EAST COAST FEVER, PIROPLASMOSIS, ANAPLASMOSIS and HEARTWATER are controlled by dipping. ANTHRAX, BLACKLEG and RABIES are endemic and are dealt with by vaccines. Research seems to have been principally concentrated on anti-trypanosome drugs

and anti-RABIES vaccines, but many other investigations were carried out.—R. MACGREGOR.

SIERRA LEONE. (1950.) **Annual Report of the Veterinary Department for the year 1949.** pp. 8. Freetown: Govt. Printer, Sierra Leone. London: Crown Agents for the Colonies. 1s. 3422

During the year the Department underwent considerable re-organization and suffered from shortage of senior staff. An outbreak of RINDERPEST, the first reported in Sierra Leone, was dealt with by slaughter of infected herds and inoculation of neighbouring herds with formalized spleen pulp vaccine made in the field. It was stamped out with a loss of only 650 head. An outbreak of ANTHRAX and one of BOVINE CONTAGIOUS PLEURO-PNEUMONIA were the only other serious mammalian diseases and both were dealt with by vaccination. Poultry disease, diagnosed as "FOWL PEST otherwise called FOWL PLAGUE" raged throughout the country as also in Gambia. Education of owners in simple quarantine rules is the only method of dealing with this problem at present.—R. MACGREGOR.

UNITED NATIONS. (1950.) **Report of the First Session of the Expert Committee on Rabies, April 17-22, 1950.** pp. 33. Geneva: W.H.O. 3423

The Report begins with a summary of the most recent advances in the study of rabies. The mouse potency test is recommended for wider application as a routine measure. It is felt that manufacturers should have access to a suitable fixed virus strain for challenge purposes. Ultra-violet irradiated virus vaccine is recommended for acceptance. The Committee find no scientific basis for replacing the Pasteur fixed virus by local strains. At the same time all production strains should be checked against other available sub-strains. The use of hyper-immune serum and vaccine in human beings after severe exposure offers very promising possibilities and a field trial is to be undertaken in Teheran. Notes on the relevant local conditions and details of the field trial are laid down in the appendix. Indications for vaccine treatment are given in a table. The control of rabies in dogs is of the greatest importance and the Committee make detailed recommendations. A field trial using avianized virus vaccine is recommended. Potency testing of this vaccine is described in an appendix. It is felt that an International Rabies Conference is highly desirable.

Future lines of research are indicated throughout the report, emphasis being laid on

research into the paralysis producing factor. A method of eliminating this factor is detailed in the appendix which contains numerous notes on processes relevant to the report and includes notes on the preparation of ultra-violet vaccine and on potency mouse testing.—G. V. LAUGIER.

MOROCCO. (1949.) **Rapport sur le fonctionnement de l'Institut Pasteur du Maroc.** 1949.

[**Report of the Pasteur Institute, Morocco, for the year 1949.**] [BLANC, G.] pp. 35. Algiers: Imp. La Typo-Litho et J. Carbonel. 3424

Research was principally directed to the possible arthropod vectors of Q FEVER (*R. burnetii*), but the life cycle of some nematodes and other parasites was investigated. Amongst virus diseases, POLIOMYELITIS and "HARD PAD" DISEASE were the subjects of experiments and a method of vaccination against the latter was suggested, virus attenuated by passage through rabbits being used either living or dead, this being quite as effective as ferret virus. On the practical side, the anti-RABIES service treated 1,102 persons, there being 4 deaths, two adult males and two infants. These were "severely bitten" by stray dogs suspected but not proved to be rabid. Treatment started 5-7 days after the bites and death occurred 21-30 days after. Various sera and vaccines were prepared as well as mallein and tuberculin.—R. MACGREGOR.

MADAGASCAR. (1948.) **Archives de L'Institut Pasteur de Tananarive année 1947 (extrait du rapport annuel).** [Madagascar. **Archives of the Pasteur Institute, Tananarive, 1947.**] pp. 76. Items of veterinary interest pp. 29, 30, 46-48 & 67-69. Tananarive: Imprimerie Officielle. 3425

A list of the types of salmonella isolated from the mesenteric lymph nodes of normal slaughter pigs, passed for human consumption, is given. Attention is drawn to those common to both animal and man, in particular *S. kottbus* or *S. newport*, and the possibility of human infection originating from the pig is discussed.

The two methods of RABIES treatment with attenuated virus are outlined. Although 269 persons had to be treated, because of a canine epizootic during the year, all were successful.

Research carried out has included a study of INFECTIOUS PARALYSIS OF PIGS which would appear to be different from TESCHEN DISEASE in that it is not so highly infectious.

The effect of hexachlorocyclohexane on skin parasites was determined. It appeared

especially effective against ticks of the species *Uroboophilus*, *Rhipicephalus* and *Amblyomma*.

—W. S. MARSHALL.

U.S.A. (1948.) Department of Agriculture. Report on the Agricultural Experiment Stations, 1947. pp. 126. Items of veterinary interest pp. 73-93. Washington, D.C.: U.S. Govt. Printing Off. 8vo. 25 cents. 3426

Yearly beef production in the U.S.A. has increased nearly 100% since 1929. This increase has produced many problems of soil conservation and MALNUTRITION due to deficiencies in the soil of minerals essential to plant and animal growth. In other cases a harmful excess of a mineral (e.g. selenium) has caused toxic effects through feeding grain, hay, etc. from land so affected.

The presence of molybdenum in excessive amounts in the soil and in fodder plants was found to be the cause of severe ABNORMALITIES OF A RACHITIC TYPE in cattle, including loss of weight, change in colour of coat, and unthriftiness, which occurred in Kern County, California, and in the mountains forming the watershed of the affected area, unweaned calves being most severely affected. Small doses of copper neutralized the effects of the molybdenum and allowed of beef production on an economic scale.

The fattening values of feeds other than maize for pigs were demonstrated. Addition of 0.5% common salt to the ration of pigs saved 9.4 lb. of feed for each pound of salt used.

Lack of any one of the vitamins riboflavin, thiamine and choline in the sow's ration caused unsatisfactory litters. Riboflavin deficiency caused erratic appetite in sows, premature births and litters of hairless pigs born dead or dying soon after birth. Surviving pigs of vitamin deficient litters required more feed per lb. of weight gained. Sows on a choline deficient ration farrowed on time but their offspring had LEG ABNORMALITIES, muscular incoordination and heavy mortality. Sows fed a thiamine deficient diet bore premature, stillborn or weakly young.

There has been a decline in the numbers of sheep in the U.S.A. in recent years. Dairy cattle have increased in numbers: The importance of vitamin A in the ration of the young dairy bull calf in ensuring early sexual maturity is emphasized.

Studies at Pennsylvania Station on the testicular tissues, and the vitamin A and carotene content of the blood of bull calves during the first year of life, revealed a seasonal influence, the vitamin A level being much lower in the winter months. Degenerative changes in

the germinal epithelial cells, believed to inhibit normal sperm production, were more evident with low vitamin A intake.

Nutritional studies at the Maryland Station established the carotene (provitamin A) needed in calfhood for three breeds during winter and summer and also the value of farm grown foodstuffs in supplying these needs. Holstein and Ayrshire calves required 30 μ g. of carotene per lb. body weight and Guernsey calves required 34 μ g. During the summer months Holstein and Ayrshire calves require 20 μ g. per lb. body weight.

Massachusetts Station established a low mortality line of Rhode Island Red fowls by means of selection which only had a 14% mortality as compared with the original high mortality line of 59%.

New York (Cornell) Station has recently completed 10 year studies on genetic control of AVIAN LEUCOSIS in White Leghorns. An original loss of 14.6% was reduced in ten generations in selected resistant strains to 8.3% and 7.9%, whereas in the non-resistant strain of the same generation it had increased to 34.9%. Mortality from all causes in the first generation was 66.8% but was decreased by two thirds in the tenth generation. These losses were based on total populations involved but it was found that by using proven sires the losses from AVIAN LEUCOSIS can be reduced below 5%. This genetic improvement in disease resistance occurred along with increases in body weight and egg size and also in the numbers of eggs per hen. This study has opened the way to the production of disease resistant stock males. Many strains are now in commercial production. Research along related lines but under different conditions are reported from several other research stations.

Pure cultures of *Vibrio coli*, isolated from the colon of pigs in an outbreak of SWINE DYSENTERY, reproduced the disease when fed to healthy pigs in five of six experiments.

A method of differentiating INFECTIOUS BRONCHITIS from NEWCASTLE DISEASE is mentioned. When the virus of the former is inoculated into the allantoic cavity of incubating eggs there is a definite dwarfing of the embryo without death, whereas the virus of NEWCASTLE DISEASE, when inoculated in the same way, causes death of the embryo.

ENTEROTOXAEMIA ("OVER-EATING DISEASE") OF LAMBS in Colorado can be controlled by feeding two-thirds oz. sulphur with the ration. The disease is thought to be caused by *Clostridium welchii* Type D. Tests of sul-

phur feeding to 1,200 lambs reduced average losses of 11% to 1%.

CALF DIPHTHERIA in Wyoming and neighbouring States affects unweaned calves. *Actinomyces necrophorus* has been constantly isolated in association with other organisms. *A. necrophorus* is also responsible for **ABSCESS** formation and **PNEUMONIA** in sheep, elk, deer, pigs and other animals.

Louisiana Station reports on investigations made on gastro-intestinal parasites of horses and mules. The investigation was mainly in terms of work days saved and feed costs reduced.

Phenothiazine destroys red blood cells particularly in equine species in poor condition or on inadequate rations, horses being less tolerant to the drug than mules. A combination of phenothiazine with carbon tetrachloride removed a higher percentage of all parasites than phenothiazine alone. It is stated that in Louisiana 2.5 million work days are saved by farmers in reduced feeding costs and lower incidence of **COLIC** and other diseases caused by parasites.

Financial losses in the U.S.A. in 1942 resulting from **MASTITIS** were estimated to amount to 19 million dollars.—J. A. GRIFFITHS.

U.S.A. (1949.) **Annual Report of the Regional Poultry Research Laboratory, East Lansing, Michigan. July 1, 1948 to June 30, 1949.** [WINTON, B.] pp. 17. [4to.] [Mimeographed.] 3427

This report summarizes the work on **LYMPHOMATOSIS** carried out during the year. Inocula made from livers of 15- and 18-day embryos and newly hatched chicks and the filtrate from livers of day-old chicks when inoculated into susceptible chickens gave 76.5-100% mortality at 308 days as compared with 17.6% in the controls. **VISCERAL LYMPHOMATOSIS** was spread by instilling the tracheal and nasal washings of chicks affected with **NEURAL LYMPHOMATOSIS** into the trachea of susceptible chicks.

No diagnostic test has been developed which gives consistent results. Work on the so-called "normal lymphoid areas" in the chicken continued with especial reference to the pancreas and visceral nerves. It appears that such extravascular lymphoid areas are abnormal and may represent early stages of the disease.

Four susceptible and two resistant lines have been maintained and the mortality figures in these show that selective inbreeding towards resistance to **LYMPHOMATOSIS** is an effective means of reducing losses. No completely resistant line has so far been obtained.

Figures are given for mortality up to 600 days for the various lines of breeding. The

heaviest losses are between 150 and 330 days. It is stated that substantial losses do occur after the 600-day period but no data are given to support this statement.

Work carried out and in progress in co-operation with various Agricultural experimental stations is briefly summarized.—D. LUKE.

U.S.A., GEORGIA. (1949.) **Twenty-ninth Annual Report, 1948-1949, Georgia Coastal Plain Experiment Station.** [KING, G. H.] pp. 80. Items of veterinary interest pp. 56-59. 3428

It has been shown that **INFESTATION WITH HELMINTHS** causes pigs to grow more slowly until their body weight reaches about 50 lb., but that, after this, they overtook the parasite-free control pigs; to produce 100 lb. gain in live weight in the parasitized pigs required 23.6 lb. more protein supplement and mineral than production of the same gain in "clean" control pigs. Wet weather appears to cause a reduction in the number of swine parasites.

An investigation of "**X DISEASE**" has given negative results. In this condition, calves become dull, and develop wart-like elevations on the skin and, sometimes, in the mouth; mortality rate is high.

DYSTROPHIC RHINITIS OF SWINE has been shown to be a contagious virus disease.

—G. B. S. HEATH.

U.S.A. (1949.) **The University of Nevada Agricultural Experiment Station. Annual Report of the Board of Control for the Fiscal Year ending June 30, 1948.** pp. 49. Reno, Nevada: University of Nevada. Items of veterinary interest pp. 23-26. 3429

The main work was on the artificial cultivation of *Anaplasma marginale*. In order to supply blood rich in anaplasma bodies in the red cells, it was necessary to set up the disease in several experimental cattle. The Dalton strain of Nevada virus has proved consistently virulent and induces the typical disease within 20-30 days following injection of susceptible cattle with 2-5 ml. of carrier blood. It was felt that some progress has been made in the attempt to adapt some of the established methods for culturing tissues and viruses to the problem in hand. Although several of the culture methods used were found adequate for the growth of mixed embryonic chick tissue and bovine spleen, they did not prove adequate for the survival or growth of *Anaplasma marginale* in the laboratory except in one instance. The use of fresh spleen tissue, while seemingly desirable is extremely hazardous owing to occasional latent bacterial flora and the possibility

of using splenic tissue from unrecognized carriers. It was found that faecal examinations as well as blood examination and the observation of symptoms should be standard routine in the differential diagnosis of ANAPLASMOSIS in the field owing to the number of worm infestations. Repeated full doses of phenothiazine suspenoid, equivalent to about 50 g. of the drug at intervals of 2-3 weeks immediately suppressed the stomach worm load with gradual return to the normal blood picture.

Immunization against LIVER FLUKE INFESTATION was not continued owing to the negative results obtained in lambs in the previous year.

In the investigation of accessory food substance deficiencies, one large range in Northern Washoe County where cattle losses and poor development were reported was studied in cooperation with the State Department of Agriculture. The trouble was found to be due to a high percentage of fluorine in most springs supplying drinking water. In some samples the fluorine content reached ten p.p.m. or at least six times the safe level.

—D. S. RABAGLIATI.

(1950.) **The Rockefeller Foundation. International Health Division. Annual report 1949.** pp. 229. New York; The Rockefeller Foundation. 3430

Since the sporozoite of the genus *Plasmodium* is the phase which bridges the gap between the invertebrate and vertebrate host, and because this stage is particularly resistant to drug therapy, it has been studied in detail in connexion with the campaign against MALARIA. Anti-malarial campaigns, generally concentrating upon destruction of the vectors, have been conducted in 12 countries outside the U.S.A.

The epidemiology of YELLOW FEVER has been studied and a field trial of a new vaccine which can be administered by the scratch technique has been carried out; this vaccine is sometimes combined with VACCINIA lymph. Radio-active phosphorus (P^{32}) and strontium (Sr^{89}) was used to mark mosquitoes; the method shows great promise.

Studies on many virus and rickettsial diseases (including Q FEVER) have been carried out. There are sections dealing with work on rodent ecology, nutrition, and TB.

—G. B. S. HEATH.

BOOK REVIEWS

DESBORDES, J. (1951.) *Diagnostic bactériologique des Mycobactéries.* (Bacilles tuberculeux et para-tuberculeux). [Bacteriological diagnosis of mycobacteria (*Mycobact. tuberculosis* and *M. johnei*).] pp. 128. Paris: Masson et Cie. Fr. 550. 3431

The chemical composition, physiology and staining properties of acid-fast organisms are reviewed in the light of recent developments. The object of the book is the improvement of clinical diagnosis. The "foam" method of isolation is described in detail. The merits of various staining processes are discussed in detail. Mention is made of the more favourable results obtained with the Ziehl Neelsen method compared with fluorescence microscopy, the use of "night blue" in the diagnosis of leprosy and a differential staining recommended by Alexander. The value of allergic tests in early diagnosis in infected g. pigs is discussed.

Culture techniques are dealt with in detail, particularly Dubos' method of deep culture, considered by D. to be of value with organisms of low virulence. Variants of the Dubos technique are similarly described. The technique and possibilities of slide culture are reviewed. Two methods of virulence test are described, Dubos' neutral red reaction and diffraction under X-rays. The last chapters are devoted

to the resistance of acid-fast organisms to antibiotics with special reference to dosage technique. Throughout the book emphasis is laid on the need for further research into the methods described.—G. V. LAUGIER.

HASSALL, A., DOSS, M. A., SEGAL, D. B. & RAY, D. H. (1950.) *Index-catalogue of medical and veterinary zoology. Part 11. Authors: N to Ozzard.* pp. 3483-3720. Washington: U.S. Govt. Printing Office. 75 cents. 3432

Part eleven of this well known series covers the letters N to the end of O and will be welcomed by all parasitologists.—M.C.

GLÄSSER, K., HUPKA, E. & WETZEL, R. (1950.) *Die Krankheiten des Schweines.* [Diseases of pigs.] pp. 481. Hanover: M. & H. Schaper. 5th Edit. DM. 27.-. 3433

The first three editions of this book were widely read and most of the fourth edition was destroyed at the end of the second world war. In this new edition the author has taken the opportunity to revise much of the text, to introduce new sections and to replace many of the illustrations. Subjects dealt with for the first time include: breeds of swine and methods of husbandry, porcine brucellosis (first recog-

nised in Hanover and Brunswick in 1949), spirochaetosis and various syndromes associated with losses among piglets which have become more frequent in many areas in the post-war years.

The first section gives a useful account of the breeds of pig found in Germany and a discussion of methods of feeding and management. The use of huts with insulated roof and walls for sows with young litters is recommended; there is a description of the temporary type built with bales of straw and a wooden roof and also of permanent wooden huts on a brick foundation.

There follows a section of some 230 pages dealing with infective diseases and then a comprehensive account of parasitic diseases by Wetzell. There are chapters devoted to poisoning, metabolic diseases, diseases of the various organs and one dealing with obstetrics and diseases of reproduction by Hupka.

There is a bibliography which is arranged according to the chapter headings and includes a fair number of recent references to published work. The short subject index of three pages is inadequate and provides little more help in finding one's way than does the detailed list of contents at the beginning.

Whereas some subjects have been revised to bring them quite up to date, others have been neglected. There is no mention of penicillin or crystal violet vaccine and the subject of vitamin deficiencies includes only mention of "vitamin B" and no reference to the individual factors of the group: "Vitamin" does not appear in the index at all.

In general, the book provides a detailed account of pig diseases as they occur in Germany, with emphasis on a number of conditions with which German workers are especially familiar. It is printed on good paper and well illustrated. As a work of reference it will be appreciated by all who are concerned with pig diseases.—E. G. WHITE.

MAREK, J. & MÓCSY, J. (1951.) *Lehrbuch der klinischen Diagnostik der inneren Krankheiten der Haustiere*. [Textbook of clinical diagnosis of internal diseases of domestic animals.] pp. xii+630. Jena: Gustav Fischer. 4th revised Edit. DM. 30.-. 3434

This book first appeared in 1911 and the third edition in 1936. This fourth edition, in preparation in 1939, was delayed by the war and now appears under the joint authorship of Emeritus Professor Josef Marek and Professor J. Mocsy, the latter being the professor of special veterinary pathology and therapy in the veterinary school in Budapest. The latest

edition is only very slightly larger than the previous one and is profusely illustrated with black-and-white drawings and photographs and with large coloured plates. A number of the latter are of great value but others might well be replaced by plates of more interest to present day veterinarians, e.g. those illustrating the ophthalmic tuberculin reaction in the ox, urine tests and favus in the rabbit and fowl.

Subjects showing evidence of considerable revision include electrocardiography and radiology, various endoscopic procedures, and parasitic diseases of the stomach and intestines. Notes are included on such diseases as "round heart" in poultry, infectious canine hepatitis and Q fever. All domestic animals are dealt with and there is a short chapter devoted to diseases of fish and bees. Some subjects, such as diseases of the ovary, receive very little attention.

This book represents the fruits of a long life of clinical veterinary work by the senior author, assisted now by his co-author. A wealth of experience has gone to produce the successive editions and they form a most valuable source of reference, encyclopaedic in character, to veterinary diagnosis. With changing emphasis and increasing control of many infectious diseases it is inevitable that the whole character of a book must change within a period of forty years: to devote so much space to tuberculin tests other than the intradermal test may seem strange to readers in many countries, as will the inclusion of so much relating to glanders and epizootic lymphangitis. But this work has taken on a dual character—a basis of information which is now partly of classical and historical value and an increasing proportion of new material and short notes on new diseases. This is a beautifully produced book which all who are concerned with diagnosis and who read German will wish to possess. It is a pity that no references to the literature are given, particularly where recent work is concerned.

—E. G. WHITE.

SILBERSIEPE, E. & BERGE, E. (1950.) *Lehrbuch der speziellen Chirurgie für Tierärzte und Studierende*. [Textbook of special veterinary surgery.] pp. xii+524. Stuttgart: Ferdinand Enke. 11th Revised Edit. DM. 39.-. 3435

This is the latest edition of the well known book originally called "Kompendium der speziellen Chirurgie für Tierärzte" and written by Prof. Fröhner (1898), at first alone and in the seventh edition in association with Prof. Silbersiepe, who has now been joined by Prof. Berge.

The text has not been altered much from that of the eighth edition of 1939, but the illustration blocks of that edition were destroyed during the war, so that new ones had to be made for the new edition. The illustrations are very numerous (457) and technically excellent in every way and are a great aid to the text.

The subject matter is of course the surgical diseases of domestic animals, systematically described, and emphasis is on the horse and the ox. The text is concise and dogmatic, in accordance with the original aim of the first author.

The book is without much doubt the leading one on its subject in the world and it is a pity that English-speaking students have not an equivalent aid of this sort to their studies, notwithstanding the current swing of importance from some animal species to others.

The quality of the paper, binding and printing leave nothing to be desired.

—J. EDWARDS.

WILLIAMS, R. J., EAKIN, R. E., BEERSTECHE, E., JR. & SHIVE, W. (1950.) **The biochemistry of B vitamins.** pp. x+741. New York: Reinhold Publishing Corporation. \$12.00. 3436

This monograph, No. 110 in the series of the American Chemical Society fully realizes the chief aims set out in the general introduction, namely to help workers in unrelated fields to correlate their work with that on B vitamins, and to stimulate further research in the field reviewed. The material, in spite of its widely diverse and very extensive nature, is presented in an essentially readable form which should be readily understood by advanced students and by research workers requiring information. Each of the four authors has produced a section into which he has brought a personal viewpoint and special knowledge of the problems discussed which is infinitely valuable to any stranger to the field.

Section A is concerned with the characterization, distribution, assay and biogenesis of B vitamins and provides a useful introduction to the more specialized sections which follow. Section B on the catalytic functions of the B vitamins is concerned with the wide field of studies on enzymes and co-enzymes derived from B vitamins and on the functions of these vitamins in the metabolism of carbohydrates, fats and proteins and their role in energy metabolism in general.

In Section C which treats of the role of B vitamins in animal and plant organisms the biological side of the story over-rides the chemical considerations. In the first three chapters of this section the problems of requirement are

considered from the point of view of methods of assessment, factors affecting requirement in different species and probable requirements of animal and plant organisms for the various B factors. In this chapter an interesting series of diagrams illustrates some relationships between body size and requirement for the different B vitamins in different species. In general, small animals have greater requirements relative to body weight but the actual variation changes considerably for the different factors. This point would seem to be of particular value to those concerned in animal husbandry. The remaining chapters of this section deal with the metabolism of the B vitamins, their physiological, pharmacological and toxicological effects and the symptoms associated with deficiency of B vitamins.

In Section D the interesting problems of inhibitory effects of analogues of the B vitamins are reviewed with a useful theoretical discussion of the question of metabolite and antimetabolite processes and the utilization of such processes for investigating biochemical problems of the functions of B vitamins. A long chapter is devoted to the role of *p*-aminobenzoic acid in relation to sulphonamide drugs with much useful information on chemotherapeutic processes. Further chapters are given to biotin, the folic acid group, the nicotinic acid group, pantothenic acid, the vitamin B₆ group, riboflavin, and thiamine. A final chapter on "nutritional factors of doubtful status" is concerned mainly with choline, inositol and porphyrins.

The whole monograph is a useful work of reference not only for the biochemist but for all whose investigations touch fields of biology, chemistry and nutrition.—A. M. COPPING.

HARVEY, W. C. [M.D., D.P.H., F.R.San.I. Medical Officer of Health, Borough of Southgate & Area Medical Officer, County of Middlesex.] HILL, H. [F.R.San.I., A.M.I.S.E., F.S.I.A.] (1951.) **Milk: production and control.** pp. viii+758. London: H. K. Lewis & Co. Ltd. 3rd Edit. 57s. 6d. 3437

Amongst the numerous books on milk, it would be difficult to find any one book where the subject has been treated in anything like the detailed manner that the authors have done in the one now under review. The book deals with the production and treatment of milk in most of its aspects, but neither the manufacture of butter and cheese, nor the preparation of cream are included. As the authors mention in the preface the ancillary uses to which liquid milk may be put are themselves of such importance as to merit separate consideration.

This third edition has been brought up to

date to a large extent, but here and there certain facts and statistics given and conclusions arrived at seem to be no longer valid and in some cases seem hardly to be fair to the improved conditions now happily prevailing.

For instance in discussing tuberculosis in cattle and its eradication the authors seem hardly to appreciate the great strides already made—at least in some parts of the country—in connexion with the attested herds scheme.

Certain errors have been repeated in this edition, for instance, that the cow's normal temperature is 102°–103°F., that the central permanent incisors appear at the beginning of the second year of the animal's life and in describing a reaction to the double intradermal tuberculin test that the reacting animals appear dull and listless and lose their appetites.

In discussing the vaccination of calves against contagious abortion with strain 19, it is said that two injections are given at an interval of six weeks prior to service and that a cow so vaccinated will react to the agglutination test for the rest of its life; neither statement is in accordance with fact. It is stated that when dishorning adult cattle the removal of the horns is prohibited under the Animals (Anaesthetic) Act of 1919 unless the animal is under the influence of some general anaesthetic of sufficient power for the whole operation. While this was so in 1936 when the book was first published, it is not so now for the Act has been amended to allow of the use of a suitable local anaesthetic. When mentioning rabies, the authors wrongly give "lockjaw" as the alternative name. It is to be hoped that should a fourth edition be called for the authors will get into touch with the veterinary profession and so avoid many of the mis-statements of which only a few are mentioned here.

Those wishing to construct new premises or even to convert existing ones for modern requirements will find the chapter on cowsheds very helpful, but no mention has been made of the Findlay system of ventilation nor of the simple and in reconstruction, cheap method of leaving a permanent opening down the ridge of a double byre so frequently resorted to in the west of Scotland.

Clean milk production is clearly dealt with and excellent chapters are included on "designated" types of milk, the future of our milk supplies, distribution, laboratory tests and heat treatment.

A chapter on legislation, comprising more than eighty pages gives a complete up to date list and an excellent summary of legislation on milk in England and Wales, Scotland and

Northern Ireland. Unfortunately, The Milk (Special Designations) (Scotland) Order of 1951 (also a consolidating Order) was not issued soon enough for inclusion in this work.

Although the authors do not hesitate to criticise where they consider criticism is called for, they are very broad-minded and fair to producers and others and appear thoroughly to understand the practical difficulties and pitfalls of our somewhat complex and varying systems of milk production.

The book is excellently printed and contains 238 figures and diagrams. There are six appendixes giving examples of dairy certificates, inspection cards, bulletins on milk, etc. There is also an alphabetical index.

The book is one that can confidently be recommended as an essential volume which should be found on the bookshelves of every up to date dairyman or any one interested in any branch of the dairy trade.

—D. S. RABAGLIATI.

VAN VLOTEN, J. M. & VERGRAGT, J. H. (1949.) *Vleeskeuringswet. S.1919, No. 524. [Meat inspection law.]* pp. 376. Zwolle: N.V. Uitgevers-Maatschappij W. E. J. Tjeenk Willink. 10th Impression. Fl. 1.75. 3438

This handy-sized pocket book deals with the laws and regulations governing inspection of meat and meat products in the Netherlands. There are chapters dealing with regulations regarding abattoirs and butchers' shops; the marking of meat and slaughter animals; ritual slaughter; private and emergency slaughter; methods of disposal of meat unfit for consumption, import of meat and meat products; the system of examining meat inspectors after training; and general administrative and legal aspects of meat inspection.—E.G.

FISCHER-GRÖBL, M. (1949.) *Klinisch-chemische Untersuchungsmethoden. [Clinical-chemical examination methods.]* pp. vii+139. Vienna: Wilhelm Maudrich. Sch. 13.-. 3439

This is a handy little guide intended for laboratory technicians employed in medical laboratories. It consists of an introduction including a description of the microscope and sections on the various techniques employed in the examination of blood, urine, stomach content, faeces, cerebrospinal fluid, exudates and transudates, sputum and smears. There is a section on general disinfection and sterilization of instruments. There are 32 illustrations and a subject index. The booklet has a stiff paper binding and paper and printing are good.—E.G.